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NOVEMBER 23, 1998 VOLUME 15, NUMBER 47

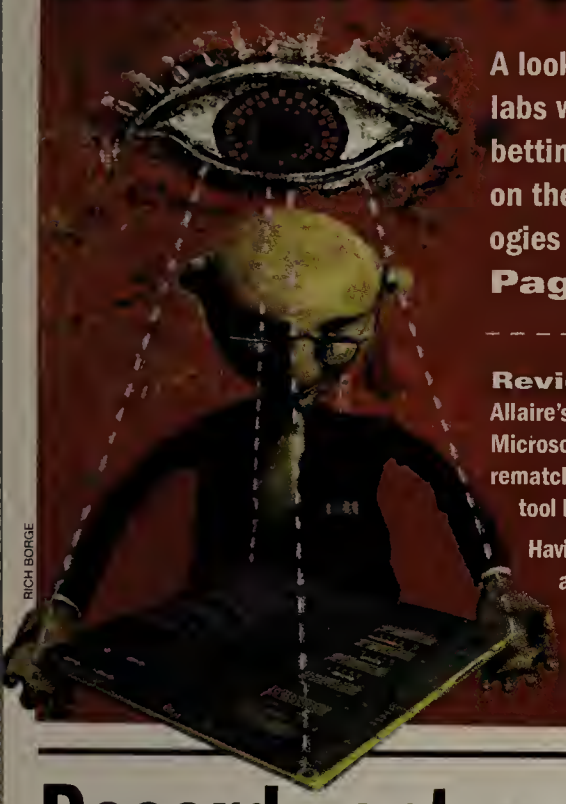
NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

LINUX NT VS.

Fusion readers face off. Page 6.

Research roulette



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Allaire's ColdFusion knocks out Microsoft's Visual InterDev in our rematch of Web page development tool heavyweights. **Page 47.**

Having trouble managing remote access? Concord Communications has a tool that can make your life easier. **Page 49.**

Cisco backs NDS... sorta, kinda, maybe

By Christine Burns
Las Vegas

Novell appeared to grab the directory brass ring last week when Cisco endorsed Novell Directory Services (NDS), but the agreement is not all that it's cracked up to be.

Under the terms of the deal, announced at Comdex/Fall '98, Cisco agreed to offer ties between NDS and two components of its CiscoAssure hardware management software. CiscoAssure is a family of products used to define and implement policies regarding network security, quality of service and address management.

Cisco is the third hardware vendor in the past month to back NDS, joining Nortel/Bay and Lucent. But Cisco will not license NDS code from Novell, as Lucent and Nortel/Bay have done. Nor will Cisco bundle NDS with its CiscoAssure products, although its competitors have agreed to bundle the directory technology directly with their respective policy management wares.

"This deal certainly can't

See **NDS,** *page 62*

MORE NOVELL NEWS INSIDE

- Exclusive: Novell tool to ease NetWare 5.0 rollouts. **Page 8.**
- GroupWise server embraces Microsoft Outlook clients. **Page 8.**
- NetWare for Small Business package gets face lift. **Page 19.**

GET MORE ONLINE:

- Join a forum to discuss the Cisco deal.
- Background on Novell deals with Nortel/Bay and Lucent.

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Record venture cash flows into 'Net start-ups

By Chris Nerney

To say that venture spending on network start-ups reached new heights in the third quarter of 1998 is like saying Mark McGwire set a new home run record this year in major league baseball. While factually accurate, neither statement does justice to the awesome accomplishments in question.

The latest PricewaterhouseCoopers/Network World Venture Capital Survey shows $1.64 billion was given to network companies in Q3. That's a stunning 44% increase over the previous high of $1.14 billion, doled out in the second quarter of this year (see graphic, page 63).

Even more amazing, network deals comprised a staggering 43.5% of the $3.77 billion in total venture investments in the third quarter. In contrast, network companies

See **Venture capital,** *page 63*

A GROWING PIECE OF THE PIE

Network start-ups grabbed a larger share of total venture dollars in Q3 than the 30.5% share they had in Q2.

Total Q3 venture spending: $3.77 billion

SOURCE: PRICEWATERHOUSECOOPERS/NETWORK WORLD SURVEY

Blue Martini stirs e-comm

By Ellen Messmer
San Mateo, Calif.

While there is no shortage of electronic catalogs and Web analysis tools, start-up Blue Martini Software, Inc. believes it's going to shake up the electronic commerce world with its own tools to merchandise retail goods online.

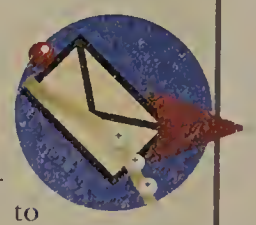
The company, which will debut next week, is still developing its Web server E-Merchandising software package and doesn't yet have any marquee customers to brag about.

But Blue Martini hopes to attract customers by building high-end Web commerce software — on the order of $1 million per installation — that will exploit known merchandising wisdom. The software will be

See **Blue Martini,** *page 64*

HO-HO-HOLIDAY HEADACHE

Can your network handle an electronic holiday card onslaught?



By Paul McNamara

You'll have to excuse the network managers at Roche Bioscience for taking a rather bah-humbug view of Rudolph and The Snowman.

SPECIAL REPORT: Oversized e-mail

It was a week before Christmas last year when a blizzard of snowman.avi and rudolph.exe attachment files buckled the e-mail hub that services the pharmaceutical giant's 57,000 employees worldwide. Anxious to avoid a repeat of that three-day dig-out this year, Roche recently replaced the hub's Digital VAX workstation with an Alpha 800, and the company intends to read a cease-and-desist riot act to workers on the problems that multimedia holiday e-cards can cause.

Roche by no means will be alone. E-mail administrators say the increasing popularity and disk-sapping size of these electronic holiday missives, combined with the everyday volume of nonbusiness junk,

See **Holiday,** *page 64*

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Beijing?

Bimini?

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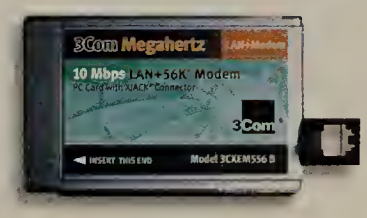

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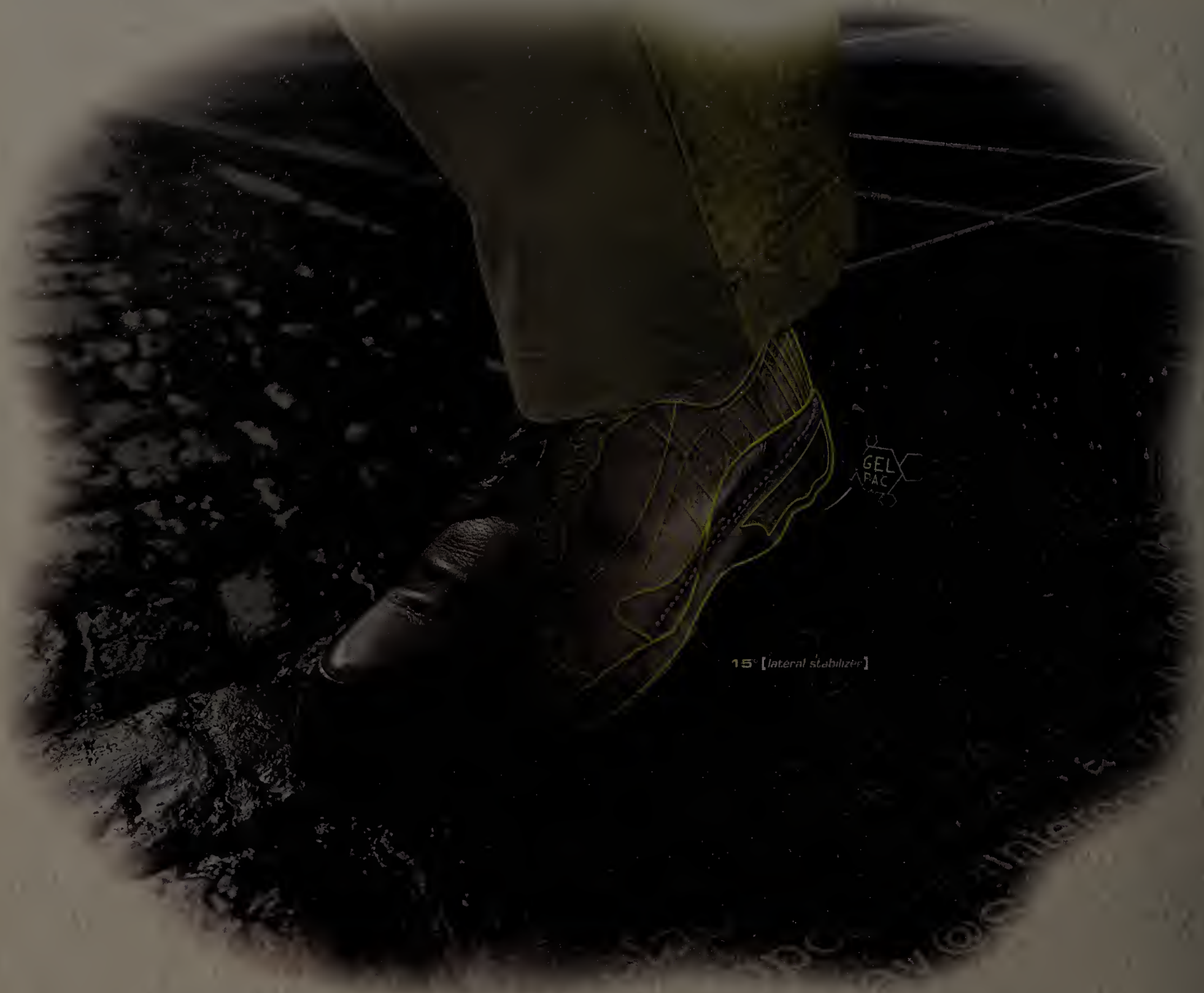

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Bill Ayers of direct merchant Lands' End ensures the network is up-to-snuff for the holiday shopping season. Page 50.

JOHN SIBILSKI

THINKING SMALL

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SOLD ON IPSEC

Schlumberger's Bill McGregor prepares to put the IP Security protocol to work on his firm's network. Page 33.

ANDREW YATES

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This Week

Only on Fusion

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Linux vs. NT. Our forum on this topic generated a phenomenal amount of interest. We've prepared a transcript of the entire online forum for you to read or download — or just jump right in and add your comments. **DocFinder: 9338**

Water Cooler: News Editor Doug Bamey walks around with bloodshot eyes all the time. And it's the fault of Web pages that print out in teensy-weensy type. He's come up with a solution that'll make somebody a mint. **DocFinder: 9337**

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News briefs, November 23, 1998

Andreessen takes a powder

■ Whether a company thrives or struggles to survive, there's nothing quite like those touchy-feely, high-tech sector perks. Ask Netscape co-founder Marc Andreessen . . . if you can find him, that is. Andreessen has availed himself of a Netscape policy that bestows up to an eight-week paid sabbatical on employees who have served more than four years. The company says Andreessen is using his break to kick back and relax. He's due back on the job Jan. 4.

Andreessen's *on a Netscape escape.*

Should he get bored earlier, Andreessen might consider *volunteering* his time with the NewHoo Community Directory Project, which his employer acquired last week. NewHoo's 4,500 "volunteer editors" maintain an Internet directory that includes more than 100,000 Web sites broken down into some 24,000 special interest categories. Netscape intends to incorporate the directory into its NetCenter Internet portal.

$1 million ain't what it used to be

■ Tickets.com, a Los Angeles company preparing to sell tickets online, last week said it has purchased the phone number 1-800-TICKETS for $1 million from a New Jersey company that owned the number. In January, Tickets.com will officially launch its ticket-selling service on the World Wide Web using InterWorld, Inc.'s electronic commerce software.

Silicon cockroaches?

■ People think they're wired now, but they haven't seen anything yet. Just wait until the world is populated with silicon cockroaches — wireless devices that can communicate with each other and the Internet, said John Sidgmore, vice chairman and chief operating officer of MCI WorldCom, during his keynote address at Comdex/Fall '98 last week. These silicon devices will multiply, becoming the Internet's biggest growth driver, Sidgmore said. "Everyone will have an average of five IP objects on their body by 2000," he predicted.

The cost of Year 2000 compliance

■ This Year 2000 stuff is getting expensive. AT&T said in a Securities and Exchange Commission filing last week that it has upped its estimate of Year 2000 spending for 1998 from $300 million to $375 million — a 25% increase. In 1999, the company will shell out another $225 million, bringing the carrier's total Year 2000 spending since 1997 to about $900 million.

Cisco on the prowl again

■ Reports have surfaced that Cisco is looking to acquire Israeli firm VocalTec Communications, a manufacturer of voice-over-IP products. The reports appeared on a high-tech wire service, which cited a story in an Israeli newspaper. According to the reports, Cisco offered $130 million for VocalTec, but the company is holding out for $270 million. Neither company would comment. The companies announced an agreement two weeks ago to make their products interoperable.

Security milestone

■ The OpenPGP security protocol has reached a milestone: It's been promoted to the status of proposed standard by the Internet Engineering Task Force (IETF). OpenPGP is the open standards version of Network Associates' Pretty Good Privacy (PGP) encryption protocol. PGP has now reached the second stage in the IETF's four-step standards process, with the next level being draft standard. IETF rules call for a wait of at least six months before a proposed standard becomes a draft.

OpenView snags routers

Network Node Manager feature is at the heart of the problem.

By Jeff Caruso

Hewlett-Packard's OpenView Network Node Manager has a problem: a network discovery feature that can cripple routers.

Users report that when NNM polls routers, its netmon discovery feature requests routing tables in the router. If the router keeps a lot of routes in its table, the box will expend most of its power to meet netmon's request, leaving little left to process traffic.

NNM is HP's core network management platform; it automatically discovers devices throughout a network, collects network events and analyzes trends. Detractors have criticized NNM in the past for its inability to handle management tasks in larger enterprises. HP has attempted to address this issue in previous releases, including the "Tornado" release in 1996, which distributed some of the functions of NNM among servers.

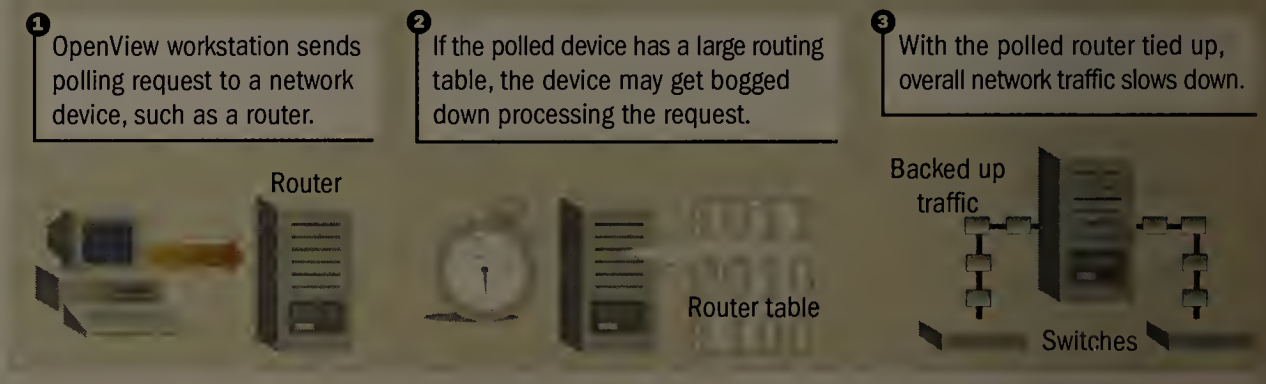
"We had to reconfigure netmon to turn this function off," says Wayne Harriman, product owner of network management systems at Charles Schwab. A few months ago, the company noticed CPU utilization topping 90% on a Cisco 7500 router and traced the problem to netmon. Since the company reconfigured netmon, it hasn't encountered that problem and it hasn't missed the discovery feature. Several users have complained of similar problems in recent weeks on the OpenView Forum's E-mail group.

Disabling the function is a simple process, but NNM won't be able to discover as many new nodes, says Reid Shay, HP's business development manager for NNM. The netmon component downloads the routing tables to find links to routers that don't communicate using IP addresses, he says. Two routers of the same make — such as two Cisco routers or two

See **OpenView,** *page 62*

POLL FAULT

Unless a network manager specifies otherwise, HP OpenView Network Node Manager will retrieve entire routing tables from network devices with every poll, sometimes slowing router performance.



Fusion forum fight: NT vs. Linux

By Robin Schreier Hohman

If last week's Fusion Face-off taught us anything, it's that network managers are a passionate lot, especially when it comes to defending their network operating system (NOS) of choice.

Network World's Fusion Web site asked readers to comment on whether Windows NT or Linux is the best NOS for the enterprise. To start the ball rolling, Bob Young, CEO of Linux vendor Red Hat, and Ed Muth, group product manager for Microsoft's Enterprise Marketing Group, explained why their respective NOSes were the best.

The result was a record number of reader responses, not all of them kind. NT got knocked because it can't be remotely administered, or as one clever reader put it, "The No. 1 remote administration tool for an NT server is a car."

The biggest issue with Linux is that there isn't a reliable support network, other than the user community.

Some readers actually see that as a blessing: "Thanks to peer-review, I can sleep at night." Others see it as Linux's downside: "Do you know why Linux (and Unix variants in general) is so stable? Because it doesn't do anything new! There's no will for improvement, only fewer bugs. No motivation to improve usability and lower the learning curve," says Fusion user Joshua Schaeffer.

The bulk of the responses were pro-Linux, but sometimes it's hard to tell if they're in favor of Linux as much as they're against NT, and more specifically, against Microsoft. For IT professionals, Microsoft bashing has become an art form, and people often go to great lengths to vilify the Redmond giant. Along with that comes an acceptance of anything seen as anti-Microsoft, and at this moment, Linux is being embraced as the NOS that may kill NT.

One reader summed it up: "I am in concordance with the majority of views expressed here. There's simply no real reason to run Windows NT in the enterprise," says Brian Miller, a manager of network technologies for a multimedia

See **Linux,** *page 63*

Get more online:

- **A transcript of the debate.**
- **Linux primers and articles.**

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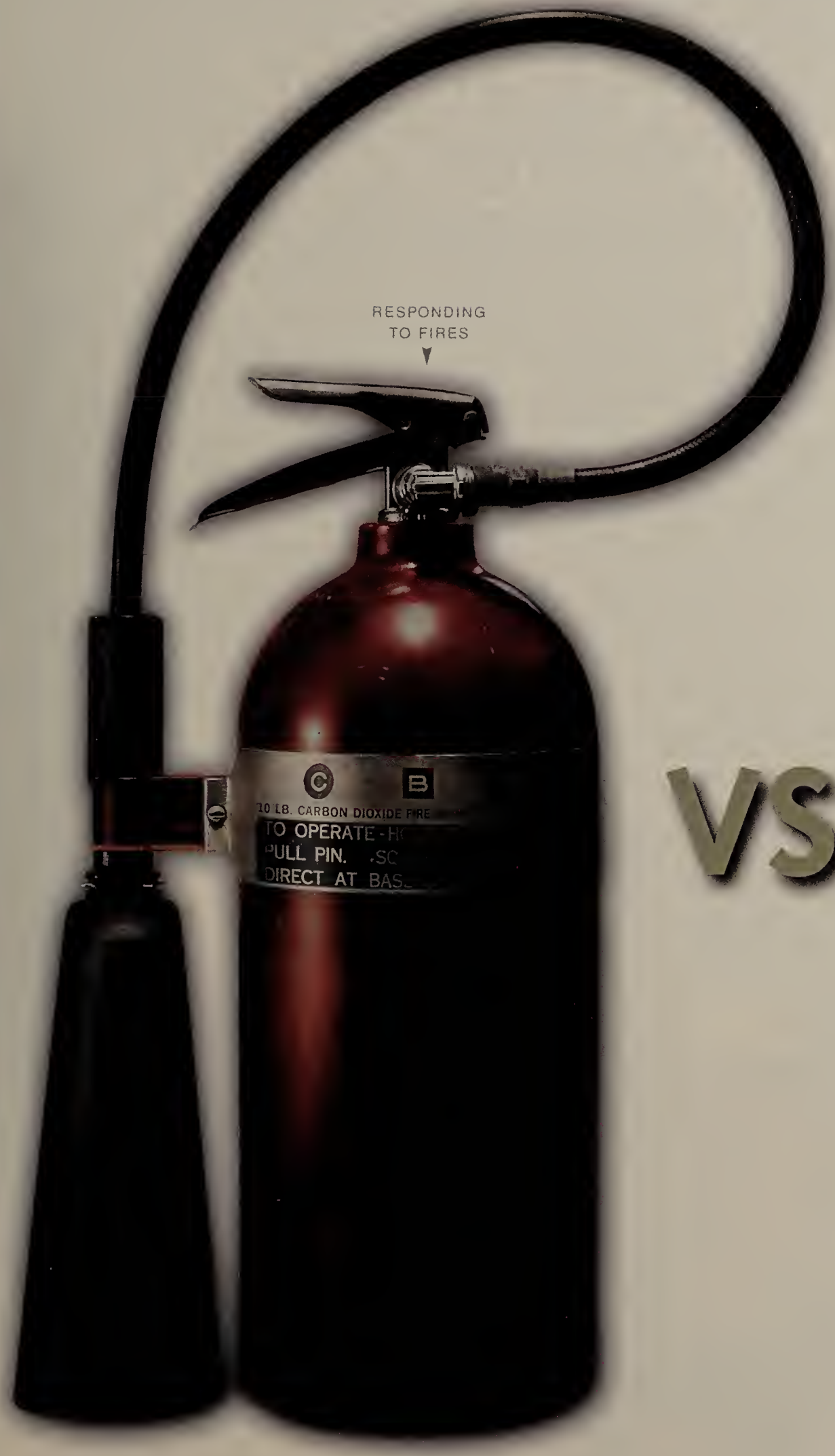

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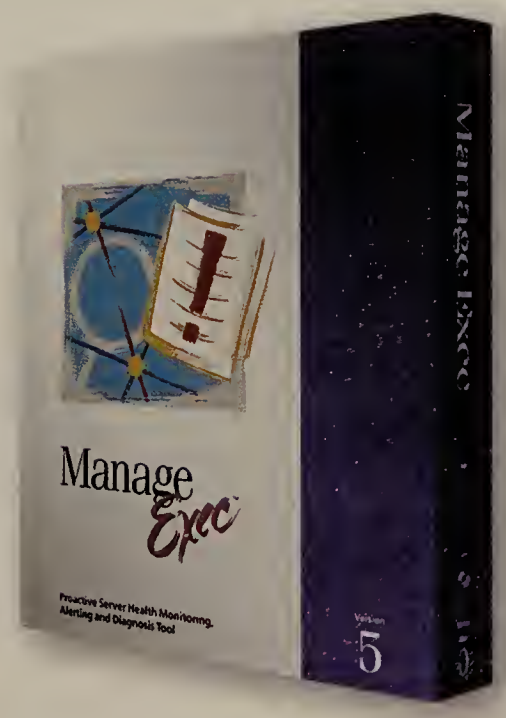

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Novell bolsters support for Microsoft desktop apps

By Paul McNamara
Orem, Utah

If you can't beat 'em, support 'em. That's the essence of two GroupWise-related product announcements from Novell last week.

The first offering — code-named Curacao — will allow users of Microsoft's Outlook e-mail client to access Novell's GroupWise server through a client-side plug-in based on Microsoft's Messaging Application Programming Interface (MAPI).

Novell's hope is to discourage customers from abandoning GroupWise and NetWare in favor of Outlook and Microsoft Exchange Server on Windows NT simply because the customers have standardized on the Microsoft Office desktop suite, which includes Outlook free of charge.

The second product — code-named Magellan — will extend the capabilities of Novell's existing WebPublisher for GroupWise to other site authoring tools and content creation applications, most importantly, Microsoft's Office 2000. WebPublisher is server software that lets users publish GroupWise documents directly to a Web site without the help of a Webmaster.

Novell expects to deliver both products in the second quarter of next year. Company officials say the offerings reflect a new Novell emphasis on providing mix-and-match client, service and data-repository options that come together in what they call a directory-enabled application infrastructure.

Novell customers and industry analysts are lauding the GroupWise/Outlook and WebPublisher initiatives.

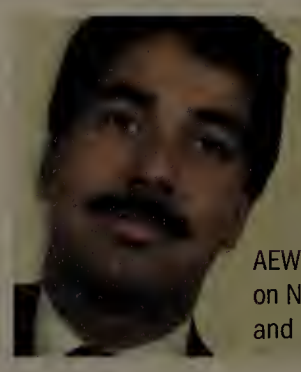
"Novell went from the giant to the little guy so fast," says Jim Santiago, assistant vice president of information services at AEW Capital Management in Boston. "The only way they're going to play catch-up is to do things like this."

Gartner Group analyst Joyce Graff believes the increasing presence of Microsoft's Outlook on Office-equipped desktops is making it difficult for Novell to sell GroupWise clients. "Arguing them out of the Outlook client is hard," Graff says. "Arguing them out of the Exchange back-end is not as hard because the investment to change over the network from NetWare to NT is huge. If customers can save themselves that effort and use the better integrated Outlook client on the desk, that's a good combination."

According to Novell, the new Outlook integration will let customers use the Microsoft client with a GroupWise server for e-mail, calendaring, scheduling, journaling and personal address book maintenance. The document management and advanced collaboration capabilities of the GroupWise server would not be available to Outlook users.

Whether such limitations will dissuade customers remains to be seen, Graff says. "The issue that comes whenever you try to support somebody else's client is the range of functionality," she notes.

Regarding its WebPublisher product, Novell contends that Magellan, used in conjunction with Novell Directory Services (NDS), will give customers better control over who is able to publish and edit Web site content than will Office 2000 alone.



"Novell went from the giant to the little guy so fast. The only way they're going to play catch-up is to do things like this."

AEW Capital Management's Jim Santiago commenting on Novell's product integration with Microsoft's Outlook and Office 2000 programs.

AEW's Santiago, whose company uses WebPublisher, agrees. "It all comes down to integrating with other systems, and Magellan will give us more flexibility and more power. Right now, we use NT security in order to get into WebPublisher, so being able to use NDS would improve on the security," he says.

Tim Sloane, an analyst with Aberdeen Group in Boston, says he believes that Novell's increased emphasis on interoperability will pay dividends throughout the company's server product line.

"If Novell can add value for the end users and the groups who like the Microsoft desktop solutions, then they remain a player on the server side, both at the network operating system level and group collaboration level," Sloane says.

Pricing for Novell's new products has not been announced.

Novell officials say they unsuccessfully sought Microsoft's cooperation before attempting the Outlook-to-GroupWise integration.

"They've told us not only 'no' but 'hell, no,'" says Tom Rhoton, product marketing director for Novell Collaboration Services. "Microsoft has let it be known that if we do this, they will change MAPI, but that's OK, we'll be able to change as well." ■

Novell tool clones NetWare 5.0 servers

NOS vendor posts a new accelerated upgrade utility on its Web site.

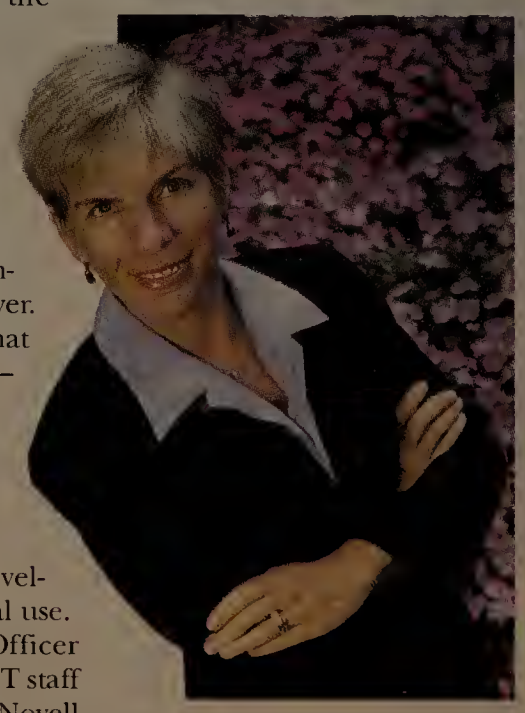
By Christine Burns

Novell late last week quietly posted on its Web site a new utility for accelerating the pace of enterprisewide deployments of NetWare 5.0 servers.

The Accelerated Upgrade Utility is a free text-based tool that basically takes a snap-shot of any fully configured NetWare 5.0 server. The tool then pushes that default server image — which comprises server configuration data and all upgraded code — out over the network to any number of target servers.

Novell originally developed the tool for internal use. Chief Information Officer Sheri Anderson says her IT staff earlier this year asked Novell engineers to build such a utility. IT needed to roll out multiple builds of the NetWare 5.0 beta code to each of the company's 500 servers worldwide.

"If you have a large shop, this will significantly cut down on the time and money you'll spend upgrading to NetWare 5.0," Anderson says. "This tool lets you concentrate your efforts on configuring one server really well instead of spending the minimal time getting a hundred up and running."



Novell CIO Sheri Anderson *says her group inspired development of Novell's new NetWare tool.*

The county government of Hillsboro, Fla., is planning to upgrade its 55 NetWare 4.X servers to NetWare 5.0 early next year.

"So much of your time during any NetWare rollout is spent getting each server configured just the way you want it. It can drive you crazy," says county IT manager Bill Kanneberg. "Any tool that cuts down on us having to do that to every server individually would help immensely."

The new tool will distribute the cloned NetWare image to servers that are brand new or that need to be upgraded to NetWare 5.0.

Novell product manager Brian Faustyn says the tool can also be used to upgrade earlier 4.X servers to NetWare 4.11.

The Accelerated Upgrade Utility is available now from Novell's Web site at www.novell.com/download.

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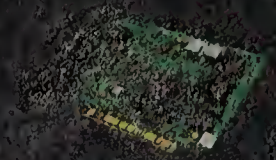

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THE MICROSOFT DIARIES

Week five

The Microsoft-DOJ Trial

MONDAY, NOV. 16

That Bill Gates, what a jokester. He had everyone laughing today — even the judge presiding over the ongoing Department of Justice antitrust trial against Microsoft.

Judge Thomas Penfield Jackson shook his head and audibly laughed after watching recorded testimony of the Microsoft CEO, who made for a visibly hostile witness as he tangled in a comical war of words with government attorney David Boies.

Boies tried to get Gates to admit that he was referring to Netscape in a January 1996 e-mail message regarding browser market share.

After introducing Gates' e-mail into evidence, Boies quizzed the executive about what "non-Microsoft" browsers he was concerned about when he wrote the message in question.

Gates said he was confused. "I'm sure — what's the question? Is it — are you asking me about when I wrote this e-mail, or what are you asking me about?"

Boies said, "I'm asking you about January of 1996."

Gates replied, "That month?"

Boies said, "Yes, sir?"

Gates replied, "And what about it?"

Windows gave *OS/2 quite a beating, Soyring said.*

TUESDAY, NOV. 17

The government once again used Bill Gates' testimony as an opener for more damaging evidence from another Microsoft industry ally.

IBM's John Soyring, who heads up Big Blue's network services division, took the stand this afternoon to testify on how Microsoft hurt IBM's ability to compete against Windows operating systems with OS/2.

Before Soyring's testimony began, the government played an eight-minute segment of Gates' videotaped deposition that dealt with IBM and lent support to Soyring's testimony about how Microsoft used its own implementation of Java to limit competition.

The government wanted to show that Gates was worried about Java. In an internal memo to a Microsoft executive in October 1997, Gates referred to IBM when he said, "The Java religion coming out of the software group is a big problem."

Gates said in the deposition that IBM was making some "extreme statements we didn't think were true" about Java and IBM's network computer, and he wanted rhetoric "lowered on both sides."

When it was Microsoft's turn to cross-examine Soyring, attorney Steven Holley asked the IBM executive whether consumers were using Windows because it was better.

"No, no," Soyring said. "It's because of the lack of availability of shrink-wrap applications" that users went to Windows, he said.

WEDNESDAY, NOV. 18

The cross-examination of IBM's Soyring ended with a bit of high drama here today.

Microsoft hired gun Holley presented an e-mail written by IBM Vice President John Thompson to Sun CEO Scott McNealy.

In the message, Thompson suggested the companies work together "to minimize the performance gap" between Microsoft's implementation of Sun's Java and the version shipped with Netscape's Navigator, which is 100% pure Java.

"Do you think it is appropriate, Mr. Soyring, for six of the largest software companies in the world to agree to collude with one another against Microsoft?" Holley asked.

One of the government's attorneys, Stephen Houck, objected to the question. The judge sustained the objection, so Soyring didn't have a chance to answer.

THURSDAY, NOV. 19

Is Microsoft a monopoly? Yes it is, according to economist Frederick R. Warren-Boulton, who told the court that Microsoft is a monopoly because it has the ability "to unilaterally control the price in the market and exclude competitors.

"The prices that it has chosen are significantly higher than the prices it could have chosen," he said.

Warren-Boulton and Microsoft attorney Michael Lacovara spent most of the morning debating whether the former's economic theories about monopolies apply to the software industry.

"It's an industry with a great deal of opportunity for rapid change," Warren-Boulton said. But he added that the software industry isn't unique compared to other industries.

Lacovara did get Warren-Boulton to concede that, if the Windows operating system had delivered less value and quality, the product wouldn't have sold as well.

Moreover, the economist also acknowledged that improvements in operating system features, such as the inclusion of TCP/IP, have benefitted consumers.

— Doug Barney and Christine Burns

Microsoft slapped in Sun lawsuit

Software maker given 90 days to pass Java tests.

By Chris Nerney

Developers craving a single flavor of Java were heartened by last week's preliminary injunction preventing Microsoft from shipping products with its own version of Java.

However, not all are confident that the result of Sun's lawsuit against Microsoft will be a one-Java world.

Last Tuesday, a U.S. district court judge in San Jose, Calif., gave Microsoft 90 days to either alter its Java-based products so they pass Sun's compatibility tests or stop selling them altogether. Microsoft officials say they would comply with the order.

Among the products that will be affected are the Internet Explorer browser, Windows 98, Windows NT 4.0, Windows 2000 (renamed from Windows NT 5.0), later versions of Windows 95 and Microsoft's Visual J++ development tool.

While Microsoft has yet to indicate how it will comply with the court ruling, company officials say the required changes will be relatively easy to make.

Play by the rules

"The ruling is good for Java and good for Java developers," says Michael Sick, a developer at New York software start-up Activated Intelligence LLC. "It demonstrates that Microsoft must play by the Java rules established by Sun, and that no amount of money or media influence changes that fact."

Sun filed a lawsuit against Microsoft in October 1997, alleging that the software giant's failure to fully support Java in its then-new Internet Explorer 4.0 browser and Visual J++ tool constituted a violation of the Java licensing agreement Microsoft signed.

According to Sun, the licensing agreement requires that all Java software developed by licensees must pass Sun-specified Java compatibility tests before it can sport the "Java-compatible" logo.

Sun charged that Microsoft's products lacked support for Java Native Interface (JNI) and Remote Method Invocation (RMI), both of which make it easier for developers to write Java applications.

Soon after Sun filed the suit, Microsoft made its Java products compatible with RMI. JNI is the interface through which a Java application developer can access native code on an operating system.

Pushing back

Microsoft countersued soon after, arguing that the Java contract allows licensees to alter the basic code to optimize it for their software.

Company spokesmen also accused Sun of selective enforcement of the Java license by suing Microsoft but not other companies, such as Netscape, whose products also were not fully Java-compatible.

But Sun has argued that Netscape and others are making good-faith efforts to comply with Sun's Java compatibility requirements, whereas Microsoft has deliberately set out to split the Java platform.

Another developer says while he'd like to see Microsoft play by Sun's rules, he's not sure last week's ruling will guarantee that.

"It's too early to tell what Bill Gates is going to do," says James Domanski, vice president of technical services for Time Warner's Book-of-the-Month Club's customer services division.

Domanski hopes "there aren't going to be two versions" of Java in the end. "It wouldn't be practical," he says.

"But," he adds, alluding to Microsoft's record of using its operating system dominance to promote proprietary software, "there probably will be." ■

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Cisco: Your voice will be heard

Company exec addresses reliability issue of running voice over data nets.

By Jim Duffy
New York

Cisco is addressing a big question mark in its IP convergence strategy by improving the reliability of its data network gear for transmitting voice.

The company is ruggedizing its products for service provider requirements, stressing its software prowess, and investing in voice expertise, according to Don Listwin, Cisco executive vice president.

Cisco's ability to ensure voice network uptime has come under scrutiny recently, especially with the vendor's claim it will go it alone into the voice world (*NW*, July 20, page 27).

Critics say Cisco may not be able to match traditional vendors, such as Lucent and Nortel Networks, when it comes to providing 24-7 uptime and 99.999% reliability for global voice infrastructures.

Hoping to silence the critics, Cisco is now completing a two-year effort to make its products compliant with Network Equipment Building System (NEBS) requirements, Listwin says. NEBS is a set of equipment requirements used throughout the telecommunications industry to help assure that purchased gear installs easily, operates reliably and occupies building space efficiently.

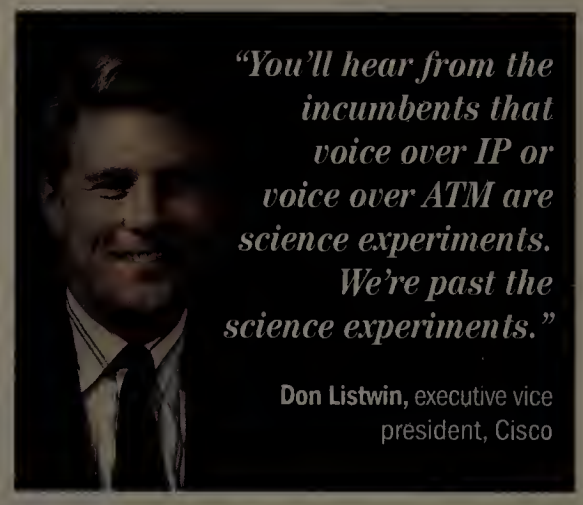
Listwin says Cisco will complete its initial product transition to NEBS by the end of January 1999.

Cisco also hopes to convince users that its software is up to the reliability task.

Reliability is "a software game," not a hardware-only issue, and Cisco is stressing that its IOS code, with features such as the Hot Standby Routing Protocol, is dependable, Listwin says.

"You'll hear from the incumbents that voice over IP or voice over ATM are science experiments. We're past the science experiments," Listwin says.

Cisco is also investing in establishing "best practices," or optimal operational policies, for voice reliability. This involves helping users establish firm guidelines and procedures for operating, upgrading and maintaining the network.



"The area where we actually have to improve the most is in best practices," Listwin says. "If users decide to upgrade the network at 3 p.m. Monday afternoon, they should have a practice that says, 'Don't do that.' That is well-established in the voice area, and it's not well-enough established in the data area." Most network problems begin when a practice that isn't well-described is executed, Listwin says.

Cisco is also aligning its best practices strategy with its ISO 9001 process, Listwin says. ISO 9001 is a quality-assurance model used by companies that design, produce, inspect, test, install and service products.

Battling the voice big shots

Cisco has been waging a reliability battle with traditional voice giants as well as skeptical analysts. Lucent, for example, has an advertising campaign that questions whether data networks can provide the same level of reliability that circuit-switched voice infrastructures — and their suppliers — have maintained for decades.

"End-user reliability is really nowhere near as low" as competitors claim, Listwin says. "All of those people who use cellular phones. . . . I can't drive from San Francisco to Palo Alto without that sucker dropping out four times."

Indeed, Cisco end users report no reliability problems running voice over their data infrastructures.

"As far as being able to pick up the phone and get a dial tone and make the call, I have no doubts," says Bob Davis, network operations manager at Amcore Bank in Rockford, Ill. "Our problems have generally been in the area of quality once the call is established."

Amcore uses Cisco routers for voice-over-IP calls among 20 locations. "There's not a whole lot of customer traffic or critical application traffic on it," Davis says.

"We haven't seen any reliability issues at all. If we've had any outages, it's been something that's external to the Cisco gear," says Dean Qualls, network operations manager at JC Bradford, a regional investment bank headquartered in Nashville, Tenn.

Hannaford Bros. and Co. of Scarborough, Maine, uses a Cisco ATM network for data and voice to its 142 grocery stores on the East Coast.

"We have the same reliability on our voice as we do on our data. This is very important to us," says Bill Homa, Hannaford IT director. "I don't have any doubts whatsoever." ■

NCD's thin clients get a multimedia boost in buyout

Tektronix division purchase adds video technology.

By John Cox
Mountain View, Calif.

The purchase of a rival by Network Computing Devices means NCD customers will eventually have thin-client desktops that sport a well-regarded technology for displaying video.

NCD purchase *will give thin clients video capabilities.*

In the short term, by buying the Network Displays division of Tektronix, NCD becomes one of the biggest players in a still emerging market — Windows-based terminals and network computers that rely on servers for data and applications.

So far, the main players in the thin-client market have been relatively small vendors, most of which have been in business for years. One exception is IBM, which resells an NCD product tailored to IBM specifications.

The NCD-Tektronix deal, which is expected to close next month, will add about 130 employees to NCD, nearly doubling its head count, and will add experienced thin-client salespeople in U.S. and overseas locations that NCD currently doesn't serve.

Tektronix's thin-client desktops are able to display streaming video managed by the company's server software.

One of the key business benefits of the deal for NCD is more heft and presence in a rapidly developing market rife with small vendors. "We saw growing demand [for thin clients] but we were limited by a $4 million marketing budget and 80 salespeople," says NCD President and CEO Robert Gilbertson. "With the Tektronix division we thought, 'together, we'd be able to create a pull effect in the market.' "

The two companies are working out the final details of the deal, so no value has yet been put on the transaction.

✆ NCD: (800) 800-9599

Cisco enhances IOS for CoS

While Cisco touts the reliability of its software, the company continues to enhance it as well.

Cisco last week announced integrated IP-ATM class-of-service (CoS) capabilities in the latest releases of its IOS software. This allows users to differentiate quality of service across multiple network infrastructures, Cisco says.

Cisco has sold *1,000 Gigabit Switch Routers.*

IP-ATM CoS ensures that traffic priority levels are consistent across IP and ATM networks. The ability to classify various types of traffic over multiple networks is a first, Cisco claims. IP-ATM CoS also permits a phased deployment of Tag Switching and Multi-protocol Label Switching, technologies for steering traffic on an IP/ATM network.

The IP-ATM CoS feature supports existing wide-area ATM network infrastructures. It is available now for the Cisco 7500 series routers.

Cisco also announced it will license its Cisco IOS Web Cache Communication Protocol (WCCP) specification to other cache vendors. WCCP was initially developed to foster interoperability between Cisco's Cache Engine and its routers. Licensing the protocol will allow multiple vendors' devices to redirect packets from Cisco routers to cache engines, Cisco says. Inktomi and Network Appliance are the first vendors to license the WCCP protocol.

Cache engines are designed to conserve WAN bandwidth and improve network response time by saving Web content in cache memory and eliminating repeat transmissions of redundant Web content. By licensing this protocol — which Cisco does not usually do without licensing its IOS software suite — Cisco can further entrench its routers into the Internet core and stave off incursions from high-speed router start-ups such as Juniper Networks.

Demonstrating its presence in the Internet market, Cisco last week also announced that it has sold 1,000 of its 12000 series Gigabit Switch Routers. The GSRs are prevalent among ISPs, such as Qwest and Sprint.

— Jim Duffy

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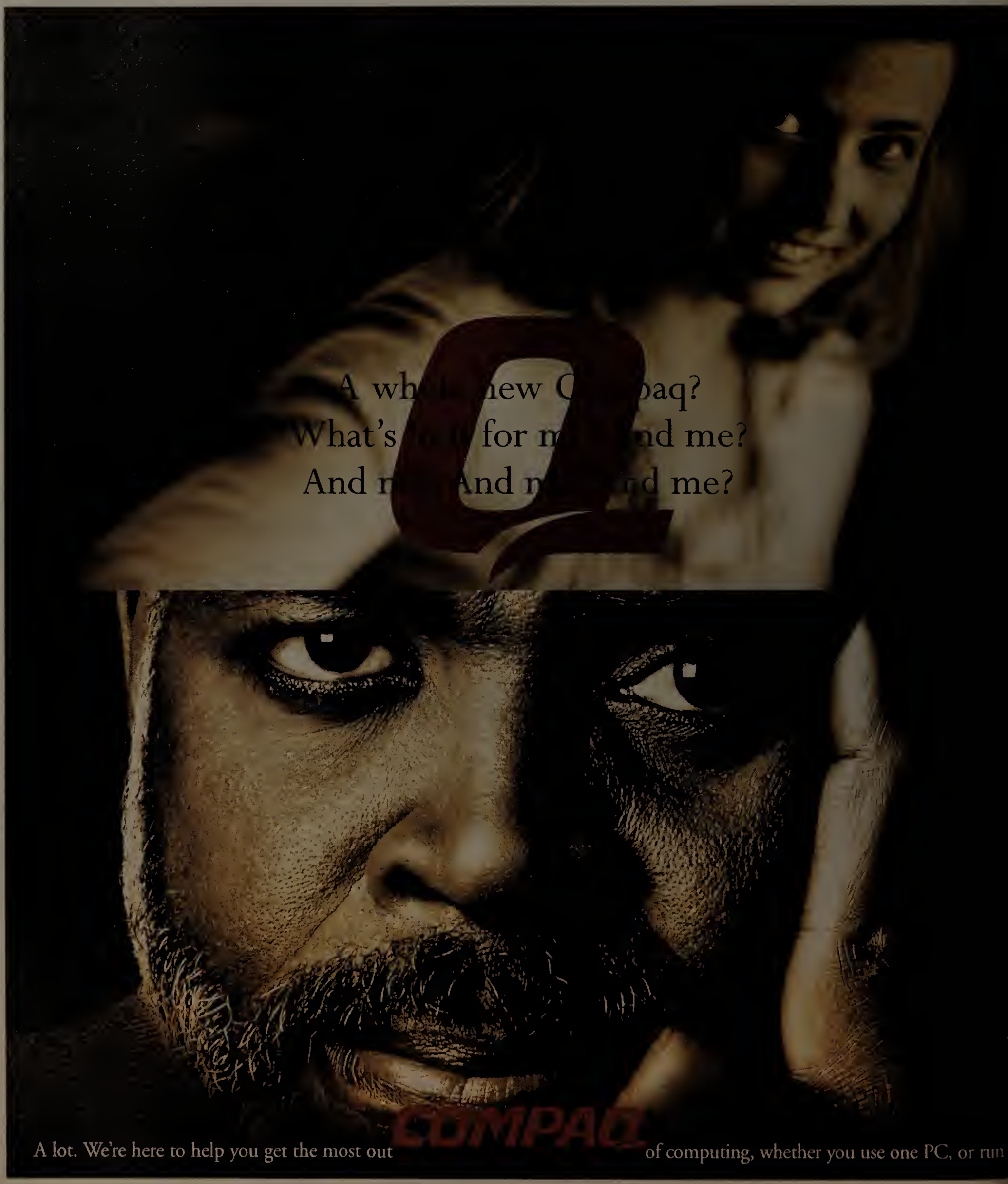

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UUNET launches DSL service, again

By Denise Pappalardo
Las Vegas

UUNET, an MCI WorldCom company, is pushing a new digital subscriber line service, which promises to offer users nationwide coverage that's not available from any carrier or ISP today. This is the third time the company has made such a pledge.

By year-end, UUNET promises 400 of its points of presence (POP) will be able to support its new UULink Symmetrical DSL service.

UUNET's Taffle *claims UULink will be highly reliable.*

The service will provide an always-on link to ISP backbones. UULink is slated to be available next month for $500, $600 and $900 per month for 128K, 364K and 768K bit/sec, respectively.

UUNET first announced DSL services 18 months ago with its ISDN DSL Preferred Access 128 service. Several months later, UUNET introduced its Preferred Access 364 and Preferred Access 768 services.

Those services, which were based on Ascend Communications equipment, were touted as nationwide offerings but never reached beyond 50 of UUNET's POPs. The services are no longer available.

UULink, UUNET's latest DSL offering, based on Copper Mountains DSL equipment, is suppose to be different.

In order to support any DSL service, ISPs have to deploy their own DSL equipment in a local central office switch. Otherwise they have to buy DSL access from a local exchange carrier (LEC).

Team effort

UUNET can use MCI WorldCom's competitive LEC division nets, but they do not have complete countrywide local service coverage. So, for the first time, UUNET is teaming with other CLECs and incumbent LECs to support its DSL services.

Combining MCI WorldCom and outside CLEC coverage will let UUNET offer UULink throughout the U.S., says Alan Taffle, vice president of marketing and business development at UUNET in Fairfax, Va. While UUNET is still using local loop facilities from the former MFS, Brooks Fiber and MCI Metro, it is now teaming with unnamed CLECs and ILECs to establish its nationwide coverage.

Some observers are skeptical about the firm's ability to deliver a nationwide DSL service.

"I'll believe it when I see it," says Johna Till Johnson, senior analyst at Meta Group, a Stamford, Conn., consultancy. "Nationwide DSL deployment will be the Holy Grail if UUNET can do it and get it priced right," she says.

But the service has to be available everywhere, and $500 per month is not the right price, she says. UUNET has to at least be competitive with other DSL services, Johnson says.

When other ISPs, such as IBM Global Services, GTE Internetworking and Concentric, are offering DSL services for $50, $100 and $149 per month, respectively, why would users pay $500 for the same service?

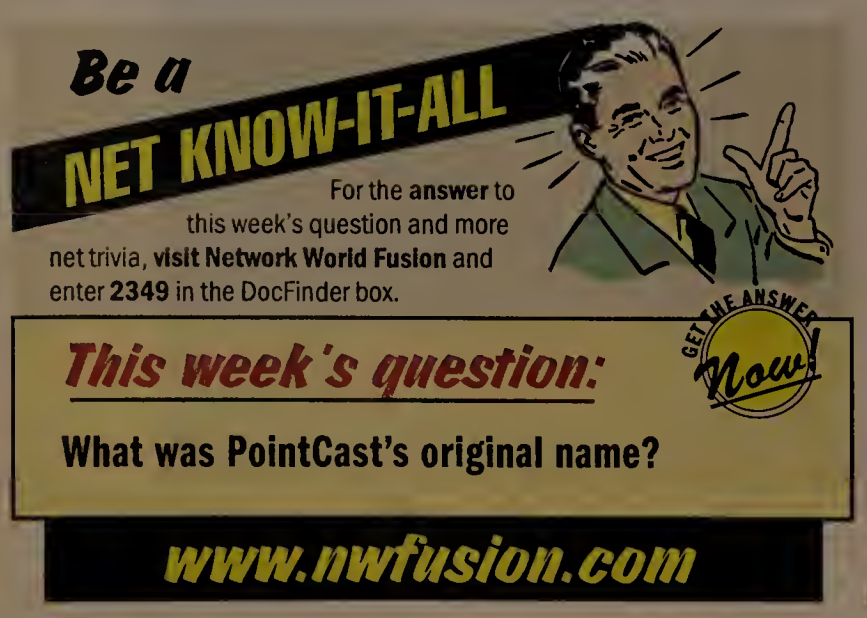
One of the reasons may be that UUNET claims UULink will be more reliable than competitors' services.

The company is crafting a new service-level agreement for UULink users — to be completed by the first quarter of next year — that will guarantee UULink's reliability, Taffle says.

UULink is also available to UUNET's wholesale ISP customers, such as Earthlink and America Online, which are testing the service.

By mid-1999, UUNET expects to have over 600 of its POPs upgraded to support UULink and plans to upgrade at least 1,000 POPs by year-end.

✆ UUNET: (703) 206-5600



Comdex reporter's notebook

Vegas filled with authors, musicians, comedians and the occasional product.

Last week about 200,000 folks converged on sunny Las Vegas for the annual Comdex/Fall '98 conference. Comdex still has a very PC-centric feel. For instance, if you were looking for the latest in subcontroller daughterboard add-ons aimed at two-tiered Gold-level value-added resellers, then Vegas was the place to be. Unfortunately, Comdex is just not as rocking a network affair as more specialized shows such as NetWorld+Interop.

Still, there was no shortage of colorful booths and personalities.

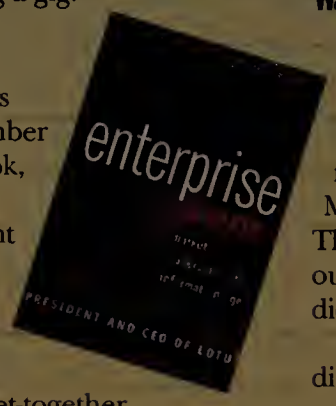
Disintermediation anyone?

For years, Comdex just got bigger and bigger. But this year, attendance ground into reverse. The best analysts, the cab drivers, guess-timated that the numbers were down a good 10% to 15%. You could feel it in the airy aisles and in the nearly reasonable cab lines. One cabbie blamed it on the increase in fees to exhibitors, which kept some of the big vendors away from the show.

Or maybe this whole notion of disintermediation, an eggheaded way of saying the Web is eliminating the middleman, really has teeth. Maybe the dealer base (Comdex does, after all, still stand for Computer Dealer Expo) is shrinking.

Yet another cabbie offered this bit of punditry. He opined that Comdex may not even exist in a couple of years as a physical event, but instead would take place entirely on the Web. Someone give this guy Gartner Group's address. He has a .9 probability of scoring a gig.

Move over Ernest



Lotus CEO Jeff Papows could have chosen a number of names for his new book, such as *Notes from Underground*. But instead he went for *Enterprise.com*, which also happens to be the Web address for a rental car agency.

Papows threw a little get-together Monday night where one could get a free signed copy of the book and all the scallops wrapped in bacon one could eat. It was just the warm-up for our next stop . . . Rockwell.

Rockwell's lows and highs

Rockwell International conducted a massive assault on the senses, all to promote the new name for its semiconductor spinoff, Conexant. Besides plastering signs on just about every cab, and getting its name printed on nearly every cab receipt, the company threw a big shindig at the Beach Club, where comedian Dennis Miller opened for the rock group the B-52s. For the 10 minutes before Mr. Miller appeared, the speakers warned that food and beverage service would be suspended during his performance, leading to smirks and grumbling from the crowd.

Finally, Miller appeared, and slowly worked himself up. The first thing he did was call Dwight Decker, the head of Conexant, a freak. Man, that was rad.

To these untrained ears, the set was a mite lame, peppered with easy jokes about the French (did you know they don't like Americans and are not exactly renowned for their hygiene?), and then went into a trademark rank, which included an obscure reference to James Boswell (a British historian). I don't know about you, but I always bust a gut over a good Boswell joke.

The B-52s capped off the evening with a rousing dance set. Although the band looked like it could use a few health club memberships, it had the audience eating out of its hands.

Waiting on Gates

How long would you wait in line to see Bill Gates? *Network World* columnist Dave Kearns interviewed the first person in line for the Microsoft CEO's kickoff keynote. That person started the queue outside the Las Vegas Hilton at 2 p.m. Gates didn't make his way onto stage until after seven.

We press had reserved seating, so our line didn't form until 90 minutes before Gates' arrival. But when the doors opened at 6:45 and members of the corps loped toward the open seats, event coordinators, like nuns in a school yard, were reduced to yelling "Walk! Don't run!"

By Doug Barney & Christine Burns

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Briefs

■ **NCR** *has rolled out the S50, a four-way* **Pentium II Xeon server** *for financial and retail organizations considering server consolidation.*

The S50 is rack-mounted or pedestal-based with hot-plug-gable power supplies and disks, as well as redundant fans.

It operates with NCR's LifeKeeper clustering software, allowing two or more nodes to be clustered for high availability.

NCR's S50 server *is powered by four Xeon processors.*

The S50 can be equipped with up to four 400/450-MHz processors and with L2 cache, which is upgradeable to 2M bytes. The S50 has seven PCI slots, supports a combination of 10/100Base-T, token-ring, ATM and FDDI connections, and boasts up to 9G bytes of disk space.

The S50 is priced starting at $9,720.

✆ NCR: (800) 444-9151

■ *Go for the RAM. That's what* **Microsoft** *advises customers who are buying desktop machines now but want to have enough horsepower to accommodate* **Windows 2000 Professional** *(a.k.a. NT Workstation 5.0) when it ships next year.*

While the software giant still won't outline exact system requirements for its next-generation operating system, company officials at Comdex/Fall '98 last week said desktops will need at least 64M bytes of RAM and a 300-MHz Pentium II processor.

Any desktop or laptop machine that currently lives up to this standard can sport the new Windows 2000 Ready logo.

Novell, IBM suites cater to small biz

NetWare for Small Business 4.2 includes BorderManager; IBM package relies on NT.

By Christine Burns
Las Vegas

Novell and IBM last week separately introduced new network software packages for small businesses in an effort to cash in on a booming segment of the IT market that could top $50 billion in three years.

Novell and IBM, as well as Microsoft, are scrambling to get a tighter grip on the emerging small-business market, and their approaches are similar. Each company is providing an integrated suite of server-side software that gives companies with less than 100 employees the ability to set up a LAN and provide end users with access to e-mail and the World Wide Web.

International Data Corp. estimates that by 2001, one-third of all network servers sold will be installed in businesses with less than 100 employees. In that same time frame, IDC expects the overall small-business IT market to reach $54 billion annually.

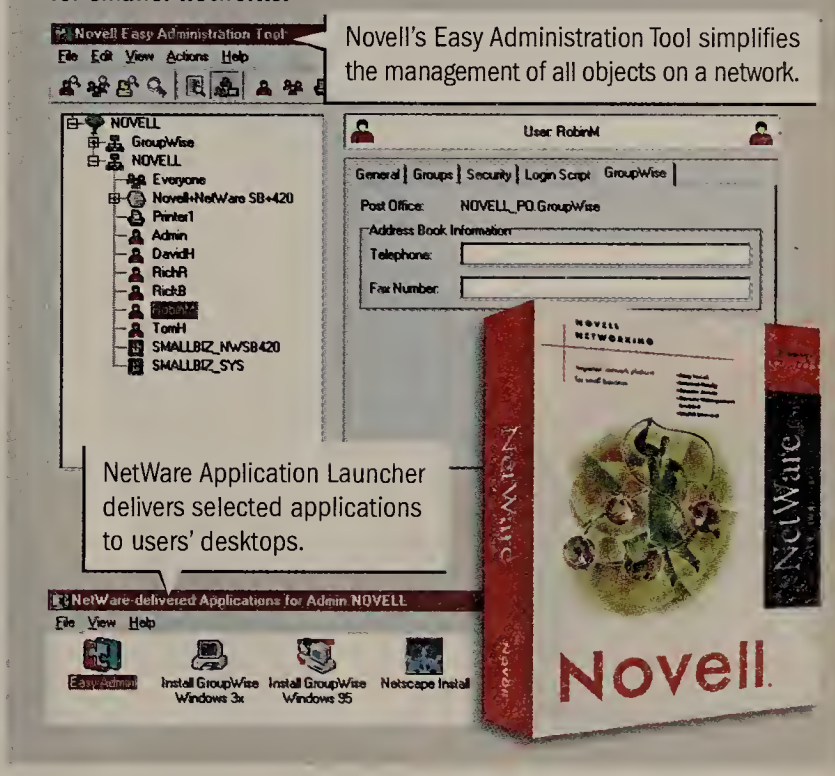
"That's an incredible opportunity for us, and we are doing everything we can to get our hands around it," says John Slitz, executive vice president of marketing at Novell.

Novell used the 19th annual Comdex/Fall '98 show to roll out its NetWare for Small Business 4.2, a software suite that doubles the number of concurrent users supported from 25 to 50. Since NetWare for Small Business hit the market three years ago, it has included NetWare 4.11, a single-partition version of Novell Directory Service (NDS), GroupWise, a five-user version of an Oracle database and a Netscape Web server. Version 4.2 also includes Novell's BorderManager FastCache for quicker delivery of Web content, inbound and outbound faxing capabilities, virus protection and backup software.

IBM provides another option Small Business Server about a year ago as a modified version of its higher-end BackOffice suite. The small suite includes scaled-down versions of Exchange, Internet Information Server and Proxy Server, all of which run atop NT Server 4.0. All components of the suite can be deployed and managed via the same administrative tool.

"MOM AND POP" NETWARE

NetWare for Small Business 4.2 optimizes familiar NetWare features for smaller networks.



The package, including a base five-user license, costs $1,295.

Novell's product works well in small-business environments because access to every component in the suite is handled via NDS, says Paul Ridel, owner of River Run Computers, a Novell and Microsoft channel partner in Milwaukee.

Of course, that won't sway small businesses that use applications which only run on Windows NT, Ridel says. "Microsoft has always done a good job making folks depend on NT for applications, and that is no different in this market," he says.

Microsoft first shipped its for NT users. The company last week used Comdex to introduce its NT-based small-business pack, which can support up to 100 users. The IBM Small Business Suite for Windows NT bundle includes Lotus Domino for e-mail, calendaring and scheduling; a DB/2 database engine; and Web, fax and modem pooling services.

IBM has set the price for its suite, which will be available exclusively through IBM and Lotus channel partners, at $499 per server and $99 per registered user. IBM has set a licensing limit of 100 users. For more information, go to www.software.ibm.com/nt.

✆ Novell: (800) 453-1267

EMC boosts net storage options

By Deni Connor
Hopkinton, Mass.

Enterprise storage vendor EMC last week announced enhancements to two of its storage management software offerings designed to ensure that end users can access data even in the event of a host computer failure.

Both software offerings work in conjunction with EMC's Symmetrix Enterprise Storage devices, which enable companies to back up and retrieve data processed by mainframes, mid-range systems and servers.

Symmetric Remote Data Facility (SRDF), which replicates data across WANs, now can work across more than two sites. With this new multihop mirroring capability, only updated data is replicated to a third Symmetric site, cutting telecommunications costs and resynchronization time. Source sites and target sites can also exchange roles and provide mirroring for each other in the event of failure. Pricing for SRDF starts at $60,000.

EMC's other software upgrade, TimeFinder 3.21, makes data easier to access by providing copies of it locally or across a WAN via SRDF. The new edition includes the ability to update only data that has changed since the last update, conserving disk space and improving performance. Pricing for TimeFinder starts at $72,000.

Dave Hill, a senior analyst for Aberdeen Group in Boston, says any software that reduces risk and increases availability of data is essential. "Enterprises simply cannot afford not having data available to them when they need it. Not only can lost data mean revenue loss, but it takes away from the productivity of people in the organization," he says.

✆ EMC: (508) 435-1000

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WIRED WINDOWS

Tracking Microsoft's pricing

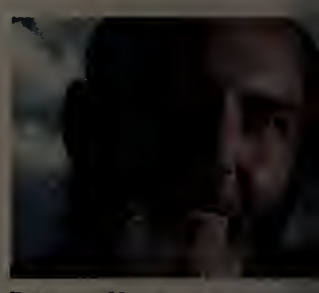
A year ago in a column titled "Microsoft's hidden price increase" (*NW*, Nov. 17, page 22), I warned you to beef up your software budget in light of Microsoft's plan to move away from concurrent usage licensing.

Under the old concurrent usage licensing plan, you only needed 10 licenses if you had 100 people using PowerPoint occasionally, but no more than 10 using it at any given time. The new plan means you need 100 licenses under the same conditions.

A recent Associated Press story indicated that technology managers are now starting to feel this grab for their wallets. And Gartner Group has reported that enterprises should expect to pay 50% more for Microsoft software over the next three years — even if the per-user charge remains constant — simply because of changes to volume purchasing contracts. Couple these findings with today's faster pace of upgrades and you're paying more for your licenses and more often.

Also worth noting is the method Microsoft uses to force you to upgrade. Files created with the newest versions of the applications can't be opened by the previous version. Under Microsoft's latest pricing scheme, you pay for upgrades to every user whether or not you install them, so you might as well upgrade.

Let's summarize: In 1991, Microsoft bundled some applications together and called them Microsoft Office. This essentially got you four or five applications for the price of two. But you got an individual license for each application, and they were concurrent use licenses. You could save further by having one copy of the software media (floppy disks at that time) and multiple "license packs," which allowed you to install the diskettes multiple times. The offer looked good. The pricing, coupled with the poor quality of WordPerfect for Windows 1.0 and Quattro Pro for Windows, pushed Word, Excel and the rest of the Office products to the top of the applications market.



Dave Kearns

Next, Office became a single-license product. There was no more breaking apart the package to give one user Excel and another PowerPoint, though you could still base your license count on concurrent usage.

Now there's no more concurrent use. You need an Office license for each user in your organization. Now that Microsoft owns the office suite market, you'll have to pay more, and pay it more often.

Sounds like predatory pricing to me.

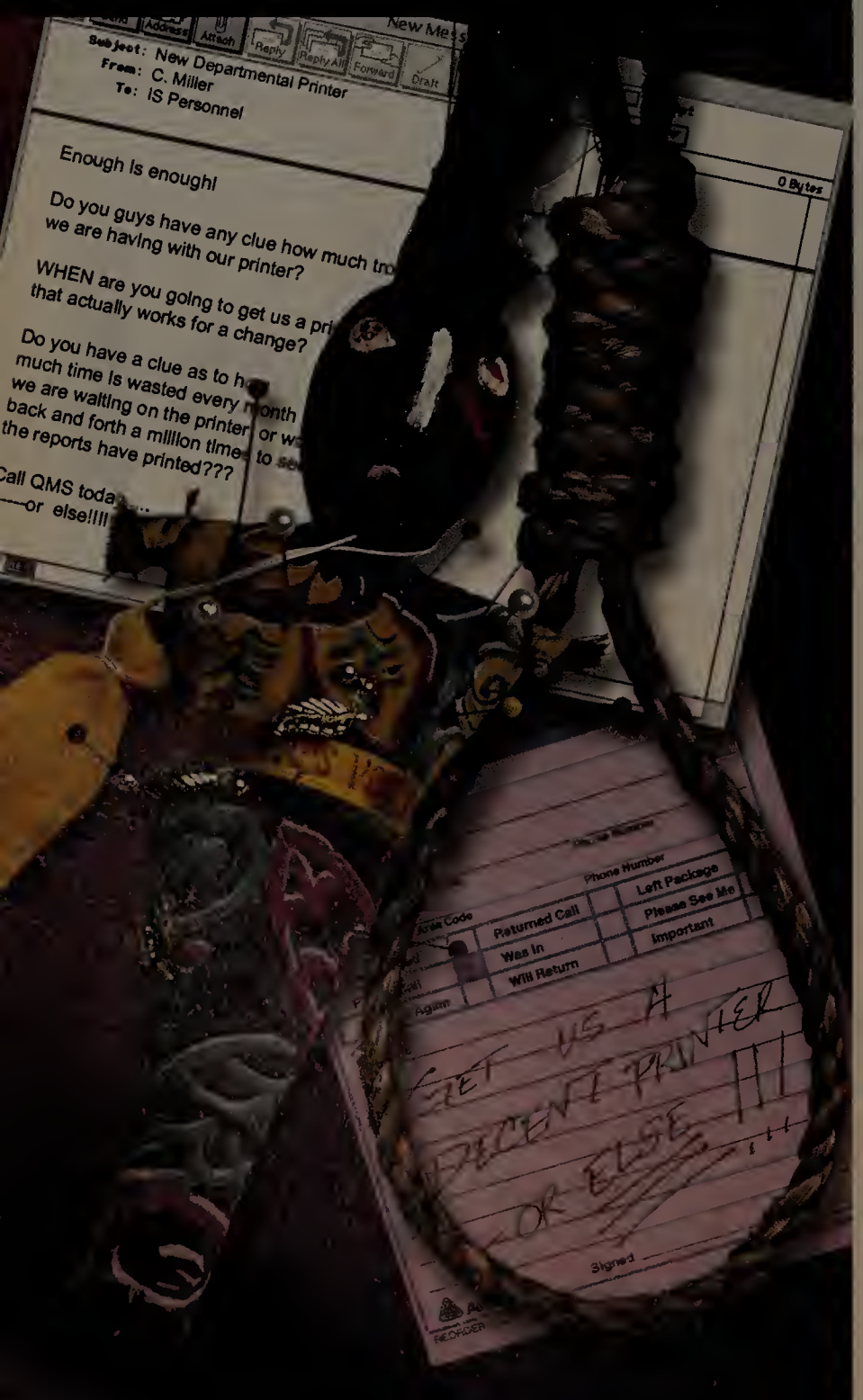
Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at wired@vquill.com.

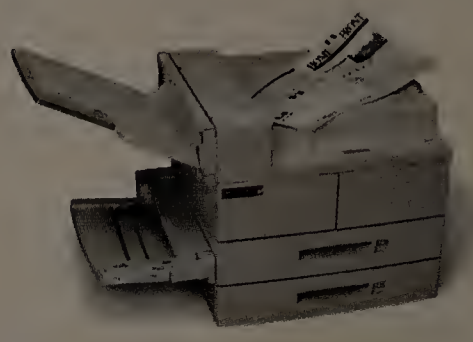
Tip of the week

Lots of people were surprised by who wasn't at Comdex. Many big hardware vendors, including Compaq, Dell, IBM, Apple, Intel, Micron and AMD, had no booths this year. The vendors claim it's too expensive to build a display for such an "unfocused" show. You, of course, know that NetWorld+Interop is a better venue than Comdex for enterprise network technology and that you're best off skipping Comdex for Interop.

IT, MIS, LAN professionals:

Tired of all the hate email, death threats, surly co-workers, the evil eye, and those stupid dolls riddled with pins that sorta, kinda resemble yourself?





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Briefs

■ *Contrary to published reports,* **Cisco has no intentions of scaling down the Catalyst 8500** *Layer 3 switch for desktop and workgroup requirements.*

Cisco says a full-blown Layer 3 switch is not needed in the wiring closet.

"The 8500 is really aimed at wire speed for the network core," says Tom Downey, director of product marketing at Cisco. "Wiring closets don't need that performance."

It's been reported that Cisco would base an upcoming — but as of yet unannounced — workgroup switch line, the Catalyst 6000, on the 8500 architecture to deliver CiscoAssure policies closer to desktops.

Policies define such things as who can use the network, when they can use it and for which applications.

Managers can also use policies to set security schemes and specify bandwidth usage.

Cisco instead plans to add more CiscoAssure capabilities to the Catalyst 5000 line, company officials say.

■ **3Com** *recently announced* **Ross Manire,** *senior vice president of the company's Carrier Systems Business Unit, is leaving for personal reasons.*

Manire, who joined 3Com when the data network company acquired U.S. Robotics in 1997, says he will spend more time with his family and explore other professional opportunities.

3Com's Manire: *leaving the company for personal reasons.*

Irfan Ali, vice president of marketing for carrier systems, will become acting general manager for the business unit while 3Com searches for a permanent replacement.

In-Site

Sun managers improve network health with Concord

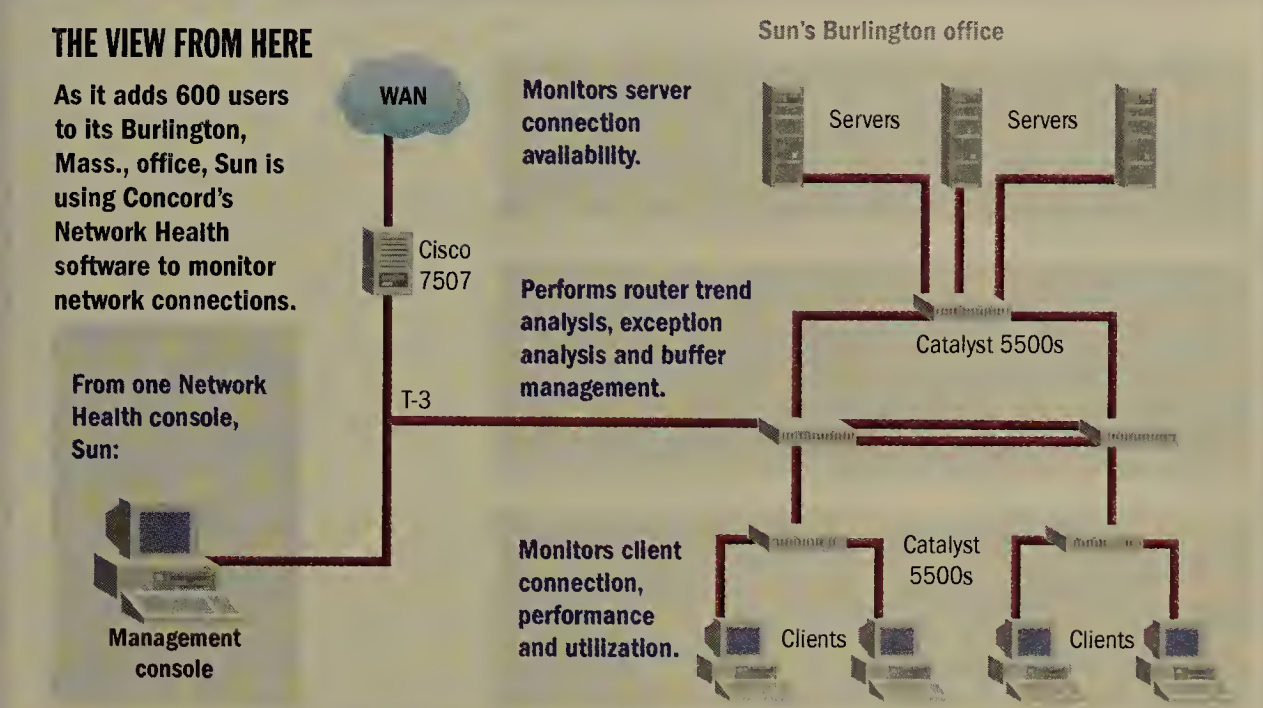
By Jeff Caruso
Palo Alto, Calif.

When applications start bogging down, everybody blames the network — regardless of whether the network deserves it.

Network managers at Sun Microsystems became tired of fending off user complaints. They wanted to prove that the slowness Sun's employees were experiencing was caused by applications and databases, not by the network.

"The user's perception is often way out of whack with what the reality is," says Curt Conrad, network consultant for Sun's Chelmsford, Mass., and Burlington, Mass., offices. To the user, "the network is always guilty until proven innocent," he says.

Several months ago, Sun installed Concord Communications' Network Health to watch its LANs and WANs. Running on Windows NT, Sun Solaris and HP-UX, Network Health software can generate reports about the performance and utilization of various parts of the network to display where problem spots are — or are not. The software can also show how well the network is meeting customer-defined service levels, how available servers are and which applications or users are driving network traffic.



Conrad says that since the installation, there have been a half-dozen cases in which he's proven the problem was elsewhere. A user claimed that multiple 100M bit/sec links were necessary to improve response time, for example, but that wasn't really the case. Network Health showed that only 5M bit/sec was being used, Conrad says.

Still, the delays users are running into are real — they're just being caused by something else, typically the database, Conrad says. "A lot

See **Sun,** *page 26*

Nortel rolls out router/switch road map

Products to address device reliability, bandwidth control and availability.

By Jim Duffy
Framingham, Mass.

Nortel Networks is girding for future network battles by boosting its router and switch lines and more tightly integrating products from its Bay Networks acquisition.

Over the next six to 12 months, Nortel will fortify its Accelar Layer 3 and Centillion ATM switches, as well as Backbone Node and Access-Node routers, to address four customer requirements: application optimization; operational efficiency; reliability and uptime; and bandwidth control.

At the same time, Nortel will roll out software that provides consistent quality-of-service (QoS), policy and management services across Nortel's Meridian and Passport switches, as well as LAN switches and routers from Bay.

The company is trying to firmly establish its products and services as more powerful alternatives to equipment from rivals Cisco and Lucent. The goal is to provide users with LAN-to-WAN QoS, policy services and management capabilities.

For improving application performance, Nortel will enhance application queuing, traffic shaping and policing on its Accelar and Centillion switches. The enhancements will let users prioritize network traffic and match traffic requirements to network service levels.

Nortel also will add voice to its Access Remote Node routers, as well as adding support for emerging policy and QoS standards such as the Common Open Policy Service (COPS) protocol and Differentiated Services (Diff-Serv). COPS provides a common way for policy servers to communicate with devices that apply traffic priority. Diff-Serv marks IP packets with type-of-service information to map application transmission requirements to network services.

Nortel also plans to add Diff-Serv to the Accelar and Centillion switches.

For operational efficiency, Nortel will add network address translation (NAT) capabilities to its routers and Contivity extranet switch. NAT will map unique IP addresses used in private networks to global Internet addresses.

For reliability and uptime, Nortel will add the Virtual Router Redundancy Protocol (VRRP) to its routers and switches. VRRP provides link failover and load sharing in a routed network. Nortel also will add dual active switching fabrics and additional power supplies to its Accelar and Centillion switches.

"The only technology we're implementing quickly is VRRP," says Brett Frankenberger, telecommunications engineer at

See **Nortel,** *page 26*

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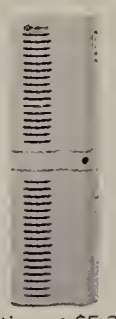

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Compaq ships computers with DSL modems

Low-cost hardware combination targets remote, home and branch-office users.

By Tim Greene
Houston

Compaq will install digital subscriber line (DSL) modems in some of its Presario PCs in an effort to encourage deployment of the high-speed access service.

Customers will be able to special order the $99 modems through Compaq's "Built for You" customization service at retail stores and via the company's Web site. The configuration could become a low-cost way to ready a telecommuter or remote office for DSL, a high-speed data service that runs simultaneously on the same regular telephone line with an analog voice channel.

The modem hardware can support DSL and 56K bit/sec analog connections, so if DSL service is unavailable in a particular area, customers will still be able to use the computer to connect to the Internet via an analog link.

Both DSL and analog modems work over regular phone lines and will be available with the Presario 5100c and 5600. The DSL-capable modems shipping now do not have software to support DSL. When the software is ready and certified interoperable with the DSL gear in service provider networks, customers can download it free.

A Compaq spokesman says he expects services and the DSL software to be deployed by mid-1999.

In addition, Compaq will load software onto the PCs that will direct customers to DSL services offered in their area. Compaq will post DSL service availability on its Web site and will send customers notice when DSL is available where they live.

Compaq is working to ensure its modems interoperate with the switching office gear in the networks of carriers that offer DSL services. Those carriers include Ameritech, Bell Atlantic, BellSouth, GTE and SBC Communications.

Dell Computer previously announced relationships with US WEST, Bell Atlantic and SBC to custom-install modems in Dell PCs. The modems will interoperate with gear US WEST and SBC use to offer DSL services.

Compaq is supporting a form of DSL called DSL-Lite, which supports 1.5M bit/sec downloads and can be installed by the customer without a visit from a telephone technician. Other forms of DSL are faster but require installation of a device called a splitter, which keeps the DSL channel separate from the voice channel running on the same line. That installation is costly and time-consuming.

An international standard for DSL-Lite was set last month, and vendors are scrambling to produce modems that support the standard as soon as possible.

Compaq will install modems made by Aware that use DSL chips manufactured by Lucent. Lucent would not say whose DSL switching office gear the modems will interoperate with. Presumably, they will work with Lucent's own switches.

Beyond DSL, Compaq will be promoting high-speed access to the Internet via cable modems and satellites, as well.

The company has promotional and marketing deals set up with cable providers Road Runner/MediaOne Express and @Home Network.

Information about those services will be on Compaq's Web site. Compaq will also direct customers to the information as part of the start-up software in the PC.

✆ Compaq: (800) 282-2667

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- **A look at DSL-Llte.**
- **An entire page of DSL primers and other resources.**

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Nortel

Continued from page 23

Union Pacific Railroad in Omaha, Neb. "We're doing some beta testing of VRRP now. It appears to work fairly well."

For bandwidth optimization, Nortel will add Multi-protocol Label Switching (MPLS) capabilities to its routers; ultrahigh-density wire-speed gigabit switching and WAN interfaces to its Accelar switches; and ultrahigh-density OC-12 and OC-48 ATM modules to its Centillion switches.

In addition to adding the consistent policy, QoS and management software across its LAN and WAN switches and routers, Nortel will include the SNA class-of-service, virtual private network security and Resource Reservation Protocol support currently on its routers to its Passport ATM and frame relay WAN switches. This will let users implement interoperable Nortel gear for SNA/LAN internetworking, virtual private networks and IP QoS requests.

Management consistency will be provided by a new Optivity management application, Optivity Passport, which will allow users to map Passport switch topology and launch management applications from the same console from which they manage Nortel LAN routers and switches.

Nortel did not provide pricing, availability or any other details on the upcoming enhancements.

✆ Nortel: (408) 988-2400

NORTEL'S PRODUCT ROAD MAP

Enhancements coming for Accelar and Centillion switches, and for routers:

Accelar
- Traffic shaping and policing
- Diff-Serv
- VRRP
- Ultrahigh-density, wire-speed gigabit switching
- WAN interfaces

Centillion
- Enhanced application queuing
- Traffic shaping and policing
- Diff-Serv
- VRRP
- Ultrahigh-density OC-12
- OC-12 and OC-48 ATM modules

Routers
- Voice on Access Remote Node
- Diff-Serv
- COPS
- NAT
- VRRP on Backbone Node and AccessNode
- MPLS

Sun

Continued from page 23

of times we're finding these databases aren't built for the wide area. They're very chatty, and they use small packets," he says.

Most of the critical applications at the Massachusetts offices are internally developed business applications for placing orders, running finances and monitoring manufacturing data. The applications are supported by Oracle and Sybase databases, and Sun's developers can often avoid the latency problems by tuning their in-house applications to run better over the wide area, Conrad says.

Last week, Sun began moving about 600 employees from its Chelmsford office to Burlington, bringing the total number of users in Burlington to 2,300 and the total number of servers to 600.

Sun plans to use the Concord software to monitor this expanded network, which uses a design the company hasn't employed in the past. Before now, Sun hasn't had a network composed exclusively of Cisco Catalyst 5500 switches, so the network managers will be watching the Burlington network carefully to ensure that it holds up under the added load. The Concord software should help the managers determine if their design is a good one, Conrad says.

The network at the Burlington site will have a high capacity. Naturally, most of the desktop systems are Sun workstations, connected via 10M bit/sec or 100M bit/sec Ethernet to the Catalyst 5500s.

In turn, these boxes are connected to a backbone over two Fast Ethernet links bound together using Cisco's proprietary Fast EtherChannel technology. Fast EtherChannel groups multiple lines together into a single logical pipe. The backbone switches are linked to each other with four Fast Ethernet lines.

Sun plans to upgrade its backbone to Catalyst 8540 switches by next summer, in order to replace the Fast EtherChannel links with Gigabit Ethernet.

Future mapping

Conrad says the Concord software will help network managers plan for expansion. "We can begin to see where the utilization of WAN and metropolitan-area network links might creep up, and we might have to resize them," he says. Currently, the Burlington site has a T-3 (45M bit/sec) WAN connection via a Cisco 7507 router.

Network managers monitor traffic up to the edge of the WAN, says Paul Bresten, information resource manager for Sun. The Concord software replaces a hodgepodge of net management tools the firm was using, including Bay Networks' Optivity and internally developed scripts.

While Sun is pleased with Network Health as a product, its pricing structure is a different issue. Determining how much to pay for licenses was a "nightmare," Conrad says.

Concord bases pricing on the number of network elements — down to the interface level — that users wants to manage. Determining the number was difficult in a network of Sun's size and complexity, Conrad says. Ultimately, Sun paid $85,000 for 500 licenses. He says it is worth it to quell users' fears about network bandwidth. "That, to me, has no price," he says. ■

Briefs

■ **Shiva and AT&T** *have teamed to sell* **IP virtual private networks (VPN).** *Shiva will serve up its LanRover VPN product suite, which supports both dial-up and VPN remote access. AT&T's WorldNet Managed Internet Service and AT&T WorldNet Virtual Private Network Service will provide the IP backbone. AT&T and Shiva will also sell each others' products.*

© Shiva: (617) 270-8810

■ **Ascend** *has plans to* **integrate load balancing with its access switches** *using technology from HydraWeb. Load balancing, which evens out the demand placed on servers in server farms to give better response times to users, would be valuable to corporations or ISPs running busy Web sites accessed via Ascend remote access gear. Ascend recently bought an equity stake in HydraWeb. The two companies are still working out what form the load-balancing integration will take.*

© Ascend: (800) 272-3634; HydraWeb: (212) 809-5900

■ *No sooner had* **AT&T** *introduced* **joint global voice and data services** *with British Telecommunication's Concert venture than rival* **Cable & Wireless rushed to file an apparent objection** *to the European Commission.*

Although Cable & Wireless would only say that it filed comments on the announcement, observers presume that Cable & Wireless complained AT&T and Concert have interconnected their specialized frame, ATM and voice networks even though AT&T's global joint venture with BT has not yet been approved by regulators.

*The new services, branded AT&T Concert, will not be generally available until next year, except for frame relay (*NW, *Nov. 16, page 88).*

Other people's money: CLECs face turmoil

Bond market slumps can trip up service providers and reduce operating funds.

By Tim Greene

Customers who want to hire start-up carriers rather than regional Bell operating companies to supply their telecom needs might want to look beyond the start-ups' networks and into their finances.

A recent dip in the high-risk bond markets revealed that the new competitive local exchange carriers (CLEC) might be vulnerable if bond money dries up in the long term. The bond slump that stretched from mid-September until the end of October didn't last long enough to hurt most CLECs, but in the past, the market has slumped for a year, and a repeat of that could mean trouble.

When a CLEC has no money in the bank and bad times hit, it can face serious trouble, according to Steve Chrust, chairman of the Association for Local Telephone Services, an industry group of CLECs. "For them it could be life and death," says Chrust, who is also vice chairman of WinStar, a wireless CLEC.

For example, USN Communications, a Chicago CLEC, earlier this month had to lay off nearly half its employees because it was short on cash and couldn't borrow more. The company sells local, long-distance, cellular and Internet access services. It has retrenched to serve its existing customers, but the company has eliminated the majority of its direct sales force.

The possibility of one of the CLEC start-ups cutting back on services or even folding has some users thinking long and hard about whether to use them.

"My main concern is reliability, and I would want some track record there. I don't want to give my business to a service provider unless it is rock solid," says Thomas Magee, network operations manager for Mentor Graphics outside Portland, Ore.

Magee says he might entertain turning one of his company's three corporate T-3 lines over to a new carrier if the CLEC offered a good deal, but he says, at the moment, he would not part with all three. "If the CLEC proved stable, I might eventually switch them all over," he says.

Evaluating the financial stability of the CLECs would be part of the process. "I would get someone from our purchasing department to look into the health of the company itself," he says.

The tight money problem will dog CLECs because many of their business plans unavoidably rely on borrowed money.

"CLECs require a major investment," says Spencer Segura, senior managing director of corporate finance for Spencer Trask Securities. They often start up with money from venture capital firms, then go to the bond market to raise funds to actually build their networks.

CLECs were the hottest start-ups going, and money was readily available until the bottom fell out of the market late in the summer, says Todd Dagres, general partner with Battery Ventures, a venture capital firm in Boston. "CLECs looked less attractive," he says. "The high-yield market was not as friendly."

Flip-flop redux

Friendly or not, in the past few weeks more than $1 billion in bonds have once again filled CLEC coffers.

Now, the key is to get plenty of money stockpiled in advance, according to Scott Chandler, chief financial officer for Rhythms, a CLEC specializing in digital subscriber line service. "You might want to raise money before you actually need it," he says. According to its business plan, Rhythms has borrowed $210 million from venture capitalists and bond markets so far.

Similarly, CLEC ICG Communications recognizes the importance of remaining liquid. "We're sitting on almost half a billion dollars in cash. We will not need money, probably forever. If we need money, we won't need it probably until the next millennium," says ICG CEO Shelby Bryan.

Corporate customers should not overlook CLEC finances any more than they would ignore the quality of the CLEC's network, Chrust says. "It's probably a good business practice any time you buy a mission-critical service," he says. ■

Money thaws for CLECs

After a two-month slump, bond marketeers are investing again. For example, the following CLECs have all had recent investment injections:

- NextLink Communications: $500 million
- MetroMedia Fiber Network: $350 million
- MetroNet Communications: $225 million

Get more online:

- **A look at the coming marriage of CLECs and ISPs.**
- **An analysis of why telecom mega-mergers might be a good thing.**

www.nwfusion.com

Carrier moves to Web billing

Focal lets users view monthly charges online.

By David Rohde
New York

A fast-rising competitive local exchange carrier (CLEC) is putting business users' telecom bills on the World Wide Web.

At the recent Communications Managers Association convention here, Focal Communications unveiled the Invoice Domain billing system. The service, offered free to Focal customers, lets network administrators view their local phone bills online.

After entering an ID and password, Invoice Domain presents users with an exact copy of their call detail reports and other bill elements. Users then have the option to download call detail sections into their own spreadsheets. Alternatively, they can call up custom reports — including color-coded bar and pie graphs — showing the most frequently called numbers and other summary data.

Because Focal typically prices local business calls on a simplified zone system, users can also determine via the

See **CLEC,** *page 28*

Picking its spots

The 10 markets where Focal is focusing its efforts:

Existing services:

- Chicago
- New York
- Philadelphia
- San Francisco

Service under development:

- Detroit
- Los Angeles
- Seattle
- Washington, D.C.

Services planned by year-end '99:

- Boston
- Miami

CLEC

Continued from page 27

Web what percentage of their calls go to which zones.

For example, for users in its home territory of Chicago, Focal offers rates based on three bands — calls within eight miles, calls within 15 miles, and calls more than 15 miles. Invoice Domain's graphs help administrators determine at a glance which bands and which prices are used the most.

Beware of online billing?

Focal officials claim to be the first local carrier of any kind to put users' bills online. Analysts say that while that may be true, users should be cautious.

Many large local and long-distance carriers offer monthly billing on magnetic tape or CD-ROM, notes Robert Rosenberg, president of Insight Research, a telecom consulting firm in Parsippany, N.J.

"So all they've done is change the electronic distribution method," Rosenberg says. "The more interesting thing would be if they could make it available in near real time."

"I need the call detail information quickly, without having to receive a box of paper in the mail."

George Ahlenius, *telecom analyst, Illinois College of Optometry*

Focal officials say the bills are only available after the usual monthly billing cycle, though Invoice Domain also makes it easy to access past bills for easy comparison.

And some Focal users find it convenient to go online for particular needs.

Illinois College of Optometry uses the online call detail to verify chargebacks to individual students when the students challenge items on their own bills, such as the length of time they were on a particular call.

"I need the call detail information quickly, without having to receive a box of paper in the mail," says George Ahlenius, a telecom analyst with the college.

Although the Invoice Domain site is password-protected, Focal does not use any encryption techniques with the application. That's also a concern given the other media available for electronic billing, Rosenberg says. For most commercial users, "there are a lot of other people who would be interested in that billing information," he says.

Focal concentrates on outbound dial-up and inbound calling, including ISDN lines, targeted separately at enterprises and ISPs.

Focal also offers T-1 services, but unlike many other CLECs, it does not emphasize bundled or integrated access services.

Instead, it casts a wide net by agreeing if it is necessary to resell the incumbent local exchange carriers' local loop to carry traffic back to Focal's central offices, all outfitted with a Nortel Networks DMS-500 telco switch.

From there, it hands off voice and data traffic to long-distance carriers via multiple tandem switches for route diversity.

Currently active in four metropolitan markets, Focal's existing expansion plan will take it to 10 markets by the end of next year (see graphic, page 27).

✆ Focal: (800) 895-8400

WAN MONITOR

The toughest DSL installation ever

Half the year, Danny lives on an island off the coast of Maine. As we have plugged time and again, "always on" connectivity is important to us, and living on an island, you tend to pray more that the electricity stays always on.

Danny needed connectivity to the island, but ISDN provided too little bandwidth and was too expensive. So Danny called HarvardNet for digital subscriber line (DSL). The service did get installed, eventually. And it works great. But installation was more than challenging, which perhaps is to be expected from a technology still so new.

In its first attempt, the installation team took the ferry out to Danny's house at Diamond Cove, got all the DSL equipment hooked up and completed the connection. The team then flipped on the switch, and as you probably guessed, nothing happened.

So how do you troubleshoot a DSL line that goes underwater from Portland, out to a wire center on Peaks Island, then to some other island, before running aground at Diamond Cove at a distance of about six miles? Not easily.

With Danny's deployment, we were using Paradyne's DSL hardware and had gotten loops of 24,000 feet, but distance was not an issue. The problem was a Paradyne MSU 4200 emulator in the wire center at Peaks Island. This emulator takes a loaded wire pair and has it "imitate" a dry pair for plain old telephone service lines. Imitating the dry wire pair was the problem, but we did not know how to fix it.

Daniel Briere
Christine Heckart

As a test, we decided to run a submarine HDSL circuit to Peaks Island. The line ran fast and clean. That told us two things. First, we needed to avoid the central wire center on Peaks Island. The issue: All lines to the islands go through this wire center. Avoiding it would not be easy.

Second, we needed to avoid the PBX at Diamond Cove. Bell Atlantic would pull a wire pair out of the emulator at the wire station so there was no load on it.

At our Peaks Island point of presence, we once again wired up the Paradyne DSL equipment and made our way over to Diamond Cove. Still, the DSL modems would not sync up.

So from our office, we took a Paradyne DSL access multiplexer and Multiple Virtual Line modem back to Peaks Island, wired up the DSLAM, went back over to Diamond Cove to install the MVL modem, and got an instant sync. Victory!

The circuit now provides 384K bit/sec of bandwidth over a dry pair, with estimated loop length above ground at 2.6 miles and estimated loop length underwater at 1.8 miles.

Your experience may not be as odd unless you have remote offices on an island or a mountain. But it may be as time-consuming and require a similar level of tenacity.

When you build a bunch of new DSL connections into your 1999 network plan, make sure you plan for some extra time hunting the gremlins that will delight in delaying your installation schedule.

Briere is president and Heckart is vice president of TeleChoice, a consultancy in Boston. They can be reached at dbriere@telechoice.com and checkart@telechoice.com.

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SPECIAL FOCUS

Broadband services

A wireless future?

Faster Internet access, improved virtual LAN and new VPN wireless offerings on tap.

By Denise Pappalardo

You can't buy it yet, but Local Multipoint Distribution Service (LMDS), in the next 12 months or so, is expected to be a viable choice for business users that want high-bandwidth, less expensive wireless services.

LMDS is a wireless technology that uses microwave signals to send voice, video and data at up to 1G bit/sec over frequency bands ranging from 27.5 GHz to 31 GHz. LMDS can transmit a large amount of bandwidth, eliminating the need for service providers to deploy costly fiber-optic cables. Service providers are expected to pass these savings on to customers.

In addition to potential cost savings, users should expect more installation flexibility. LMDS, first touted as an alternative to wireline cable television services, is much more than a venue for video. Service providers are planning to roll out offerings that will let users put their voice, data and video traffic on one WAN that's free of bottlenecks.

LMDS services will compete with digital subscriber line, frame relay and even ATM services.

Analysts anticipate LMDS offerings to cost 50% to 75% less than traditional private-line services, but new LMDS license holders are not yet talking about pricing, says Scott Clavenna, senior analyst at Pioneer Consulting in Cambridge, Mass.

LMDS is still a newborn in the world of telecommunications services, but LMDS carriers will soon be competing head-to-head with incumbent local exchange carriers (ILEC) for users' business, he says.

1999: Year of action

1999 is expected to be the year when license holders will choose equipment vendors and start detailing their service plans, says Ira Brodsky, president of Datacom Research, a consultancy in Chesterfield, Mo. Some of the new LMDS service providers are already getting their ducks in a row.

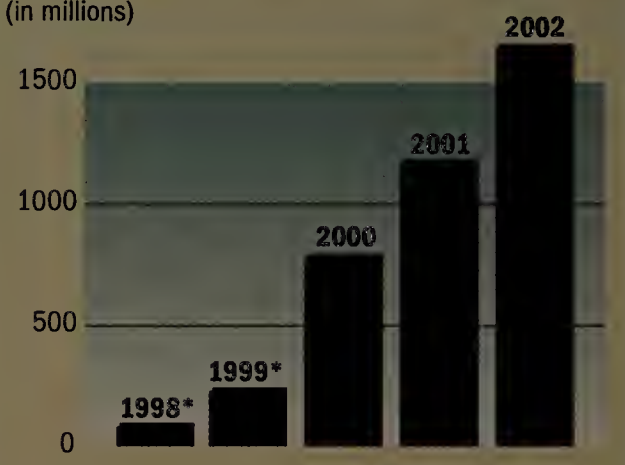
Within the next few weeks, WNP Communications of Reston, Va., is expected to announce technology trials, says Thomas Jones, CEO and president of the company. "There are about 25 LMDS vendors out there now. Technology trials are key in determining which vendors' equipment will work best," he says.

WNP is the largest LMDS investor to date. The company just last month handed over $187 million to the Federal Communications Commission for licenses in key markets, including Boston, Chicago, Dallas-Fort Worth, Detroit, New York, Philadelphia and San Francisco. The company has backing from Royce Holland, former MFS Communications executive and current CEO of Allegiance Telecom, in addition to venture capital firms.

LMDS HAS POTENTIAL

While LMDS services are not available today, within five years business services based on the broadband wireless technology are expected to garner more than $1 billion.

U.S. LMDS business service market summary, 1998 to 2002 (in millions)



*These years include other broadband wireless services, such as Multichannel Multipoint Distribution System.

SOURCE: PIONEER CONSULTING, CAMBRIDGE, MASS.

While WNP hasn't officially announced any of its services, Jones says the firm will offer business users virtual private network, Internet access, voice and virtual LAN services.

"We are doing a lot of work on operations support, which is all of the stuff for managing the business from order entry to service provisioning and billing," Jones says. Customers will have access to all of their billing information over the Internet from the start, he explains.

LMDS holds promise for low-cost services, but it's not the only broadband wireless technology in the market today. Winstar and newcomer Teligant are currently offering wireless services in the 24-GHz and 38-GHz bands today that are based on "proprietary" technology, Clavenna says. But WNP doesn't believe it will be at a competitive disadvantage rolling out its services 12 to 18 months later because the ILECs are the real competitors, Jones says.

While Teligant's services are primarily based on the 24-GHz spectrum, WinStar is using a combination of 24-GHz, 38-GHz and soon the 27.5-GHz to 31-GHz LMDS spectrum to reach customers.

Filling the gap

WinStar is investing $43 million in LMDS licenses that will be used to fill in the areas where the company was unable to acquire a 24-GHz or 38-GHz license, says Dave Ackerman, executive vice president for business development at WinStar.

WinStar will be using LMDS licenses to supplement existing service offerings to business users across the country. But some smaller LMDS license winners are planning on offering services in one or two cities.

For example G.W. Wireless, a cooperative of local telephone companies in the Midwest, purchased two LMDS licenses that cover South Dakota's Rapid City and Watertown areas. "We plan on filing for competitive local exchange carrier status in Rapid City," says Dave Lafee, plant manger at G.W. Wireless.

G.W. Wireless plans to offer Internet access, LAN and other data services to business users, Lafee explains.

The company chose LMDS because of the bandwidth and because the firm will be able to offer users more than just plain old telephone services, Lafee says.

When the FCC first auctioned LMDS licenses, it excluded all ILECs and cable television companies from participating. The idea was to promote entrepreneurial opportunities to allow a small company such as G.W. Wireless to expand its business.

But some haven't viewed the FCC's LMDS auction as a complete success. While the auction has earned more than $500 million, the government was left with 122 licenses that were not bid on, Brodsky explains. In addition, the FCC has 46 licenses for which winning bidders Baker Creek Communications, New Wave Networks and Pinpoint Communications did not pay.

The FCC will reopen bidding on those licenses in April 1999. ■

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Briefs

■ **FreeGate** *next month will start shipping* **three Internet servers** *intended for businesses with up to 25 employees.*

The turnkey OneGate 150 servers feature router and firewall technologies. They also have Web, file transfer and remote management capabilities that can be secured using encryption protocols, such as

FreeGate's *Internet servers are for small businesses.*

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The OneGate 150 line is composed of a V.90 analog dial-up edition for international and North American use for $2,195; a dial-up ISDN and ISDN digital subscriber line version for international use that costs $2,995; and a dual Ethernet connection model that can be linked to external routing equipment and costs $2,995.

✆ FreeGate: (800) 280-8816

■ **Infoseek** *last week began shipping a new version of its* **UltraSeek Server search engine** *as well as an add-on that organizes the content of corporate intranets and Web sites into browsable categories.*

Version 3.0 of the search engine can sort documents created in Extensible Markup Language and supports Secure Sockets Layer encryption.

The search engine is priced at $995 for sites with up to 1,000 documents and $4,995 for sites with up to 10,000 documents.

The add-on software, dubbed UltraSeek Server Content Classification Engine, starts at $4,995 for sites with up to 50,000 documents.

✆ Infoseek: (800) 781-4636

In-Site

Making the move from modem bank to IPSec

Schlumberger plans to cut remote access costs by using security standard technology.

By Ellen Messmer
Austin, Texas

Schlumberger Corp., a global giant in oil-field services, has long been dependent on dial-up modems to connect tens of thousands of employees in about 65 countries to its corporate LAN.

This remote access scheme has forced the company to maintain about five dozen modem banks around the world and has cost Schlumberger a bundle on point-to-point long-distance telephone calls.

Time for change

But the era of the modem bank appears to be drawing to a close at Schlumberger, which now plans to migrate to a remote access system based on Internet access lines and IP Security (IPSec) technology.

Over the next 12 months or so, Schlumberger plans to start swapping its dial-up modems for IPSec-based virtual private network gateways from TimeStep and complementary client/server applications from other vendors.

By relying on IPSec products, Schlumberger hopes to provide its employees with a secure, global access network and enable trading partners to exchange encrypted data with Schlumberger by deploying their own standards-based remote access gear.

IPSec advances

Though slow to take shape over the past three years, the most recent version of the IETF's IPSec standard has finally "crossed the threshold of viability," says Bill McGregor, senior research scientist at Schlumberger. His group has been closely following the standard's development, and its implementation in vendor firewalls, gateways and routers.

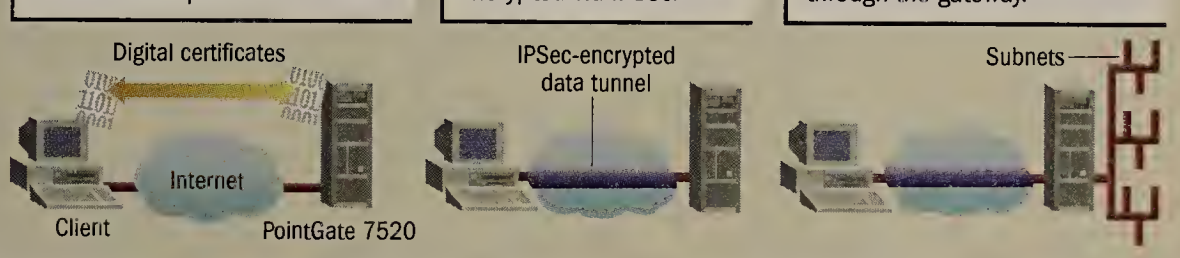
IPSec, which defines authentication and encryption tech-

See **Schlumberger,** *page 36*

SCHLUMBERGER DRILLS DEEP WITH IPSEC

Oil-drilling giant Schlumberger plans to migrate from dial-up modem banks to Internet access based on IPSec. The new setup will provide remote users with secure access and reduce phone charges.

1. An end user accesses the TimeStep PointGate 7520 VPN gateway over the Internet via a Web browser. The user is authenticated via a digital certificate swap.
2. A private tunnel is established between the client and the gateway. Data sent through the tunnel is encrypted via IPSec.
3. The remote user's access to the rest of the network is controlled via IPSec. Authenticated users can access up to 20 subnets through the gateway.



Lotus posts real-time messaging beta

Sametime offering also supports document and applications sharing.

By Paul McNamara
Las Vegas

Lotus last week released the first public beta of its new Sametime product line, which will let customers exchange short messages, monitor the online status of colleagues and collaborate on shared documents — all in real time.

Lotus expects Sametime, which was unveiled at Comdex/Fall '98, to extend these synchronous capabilities to users of the asynchronous collaboration functions already found in the company's flagship Notes client and Domino server. Sametime may also be deployed as a stand-alone client/server product.

Customers and industry experts, while bullish on real-time technology and the Lotus offerings, have reservations about how quickly such products will spread from their roots in the consumer market into the corporate workplace.

The product line includes the Sametime Connect Client software and Sametime Server software. The server also can be accessed via a Web browser, Notes 4.6 and the upcoming Notes 5.0 client for online conferencing. Sametime Connect Client users are able to specify who may and may not monitor their online status.

Joe Litton, lead programmer/analyst at GST Telecom in Vancouver, Wash., says his firm is intrigued by Sametime but put off by its system requirements.

"The stopper for us was that Sametime requires a separate physical server," Litton says. "We've got 25 or more sites scattered about and we've already got an applications server at each of them. We can't put another server at each site just to support this application."

Sametime Server runs on Windows NT 4.0, while the client software runs on Windows 95, 98 or NT.

The Sametime products are the fruit of Lotus' acquisition this year of DataBeam, a Lexington, Ky., maker of real-time conferencing and distance learning servers, and Ubique, an Israeli software firm. The beta can be downloaded at www.lotus.com/sametime.

Lotus expects to ship Sametime before year-end. While prices were not announced, company officials say Sametime will carry server-based pricing and "a low client-access fee" designed to encourage enterprisewide deployment.

✆ Lotus: (617) 577-8500

e-business

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ODI launches XML server

New offering is based on Object Design's established object database.

By John Cox
Burlington, Mass.

Object Design, Inc. last week introduced server software designed to make it simpler to move, share and manipulate data over the World Wide Web.

The new software, called Excelon, is essentially a database for Extensible Markup Language (XML) documents.

XML in detail

XML is an emerging Web standard. Among other things, it provides a common way to put "live" data, such as sales figures, customer information and orders, into a Web document.

Today, for the most part, Web users can only view this data in HTML form. It isn't easy for users to pull the data out, use it in local spreadsheets or analysis programs, and share the results with others. Similarly, sharing data between server applications and platforms is a cumbersome, time-consuming process.

XML simplifies all this by providing a common format that users and developers can employ to store data in documents. These XML documents can then be accessed, and the data manipulated, by any tool or application that makes XML requests.

Now in limited beta testing, Excelon is a data manager for large numbers of XML documents. In the future, users will be able to generate XML documents from spreadsheets or other programs and store these directly in Excelon.

"[Excelon is] a way of sending data back and forth easily between companies."

Joe Hildebrand, *senior architect of research and development, Interlink Group*

Alternatively, using third-party tools or OLE DB calls, administrators will be able to shift big chunks of data to Excelon servers from relational database servers.

ODI's new software is based on the company's existing object database technology, which stores documents, manages information and monitors even the most complex interrelationships among data.

According to one systems integrator, XML and Excelon will probably have the biggest impact in business-to-business applications in which companies want to share information, as in today's electronic data interchange systems.

"[Excelon is] a way of sending data back and forth easily between companies," says Joe Hildebrand, senior architect of research and development at Interlink Group in Denver. The software should help companies eliminate the need for cumbersome file transfers or parsers used to translate between different data formats, Hildebrand says.

Instead, a car manufacturer could store order or parts information in XML on Excelon. Suppliers could then access this information via an extranet connection and feed the data into their own enterprise resource planning and manufacturing applications.

ODI will begin a broad beta test of its software around year-end. It plans to generally release Excelon by April 1999. The software will first run on Windows NT Server and later on Solaris and other Unix systems. Pricing has not been determined.

✆ ODI: (781) 674-5300

Get more online:

- **An Excelon overview from Object Design.**
- **Primers on server-side XML.**

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Schlumberger

Continued from page 33

niques for secure access, used to be limited to gateway-to-gateway data exchange.

Now IPSec also includes a more complex client-to-gateway security mechanism that lets a user with IPSec client software remotely authenticate his identity to the gateway.

As soon as this authentication happens, the user is granted encrypted access to as many as 20 authorized subnets behind the IPSec gateway. With this security system, the remote user can be restricted to specific LAN segments rather than be allowed to roam at will through the entire corporate intranet.

Schlumberger's Bill McGregor *says IPSec is now viable for production use.*

ANDREW YATES

"The client software knows what subnets are behind the gateway," McGregor says.

For the remote computer user and the organization's gateway to identify each other, they can swap digital certificates or predefined shared secrets as simple text strings. Schlumberger has chosen to use Entrust Technologies' X.509 digital certificates.

Under Schlumberger's setup, the user's IP address will also be viewed as a source of identity by the IPSec protocol. Each IPSec gateway will be able to dynamically assign an IP address to a remote user for use on the corporate network as the user is granted encrypted access. This technique is sometimes called tunneling.

IPSec now performs IP assignment in an automated way, while in the past, manual intervention would have been required to add the temporary IP address to each client.

According to McGregor, the IPSec technology has "moved from being an experiment a year ago," to being mature enough to deploy operationally. The first users to get IPSec software on their computers will likely be Schlumberger's sales, research and field engineers. ■

'NET INSIDER

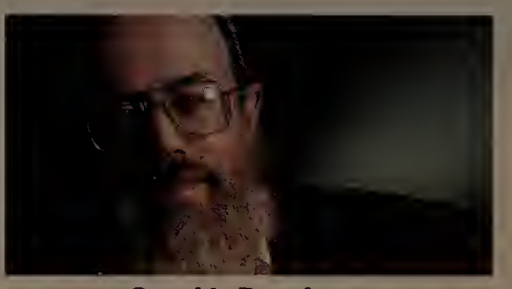
Not just for ISPs

I'll admit upfront that I'm biased on this topic. The first book from the new Wiley Publishing Networking Council series has just come out. I'm biased in four ways: I, along with Vint Cerf, Lyman Chapin and Ed Kozel, make up the council; the author, Geoff Huston, is a friend of mine; I recruited him to write the book; and if you go buy a copy, I get some pittance.

The book is called *ISP Survival Guide: Strategies for Running a Competitive ISP* (ISBN 0-471-31499-4) and is targeted at the technical and management people working at ISPs. Geoff covers every facet of design, operation and management of ISPs. His insights come from managing such a company for about 10 years and from teaching hundreds of students from around the world in the annual Internet Society Developing Countries Workshop.

The more I dealt with some of the ISPs currently in business, the more an overarching book of this type seemed like a good idea. Some wag once noted that there were only a few hundred people in the world who could actually run the technical side of an ISP, but unfortunately, there are more than 7,000 ISPs. All too often, I've had to try to deal with some of the other ISPs, the ones without an adequate clue. This book should help close the gap.

It is a testament to the design and implementation of the Internet transport and routing protocols that this motley collection of independently owned and operated networks we call the Internet seems to work most of the time. Not all the time, but most of the time. The IETF and other groups proposing new technologies for use in the Internet should keep the uneven clue distribution in mind when they design new protocols.



Scott Bradner

But even with the best and most robust technology designs, some of the technology, and particularly the business climate, can be quite a challenge to understand.

Geoff's book can be quite helpful in these areas.

In spite of all of the above, the subtitle of the book might not be right because the subtitle focuses on the business of running a competitive ISP. Just looking at the technology used and the management skills required, it can be hard to distinguish many corporate networks from ISPs. In this case, ISP could mean Internet service provider or intranet service provider. Even with this being the case, relatively few intranet service providers have to compete with another intranet service provider within the same company to see which one can make the most money.

In spite (I hope) of my biases, I think this is a good book and will prove quite useful to all sorts of people at both Internet and intranet service providers. Anyway, my wallet hopes the book will prove to be as good in the eyes of others as in mine.

Disclaimer: This column is mostly disclaimer and Harvard had nothing to do with it.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@harvard.edu.

NUTTER'S NETWORK HELP DESK

Ron Nutter, a Master Certified Novell Engineer and Microsoft Certified Systems Engineer in the Lexington, Ky., area, tracks down the answers to your questions. Call (800) 622-1108, Ext. 7476, or send your questions to helpdesk@networkref.com.

NetWare 5.0 runs an X-Server screen at the console. Novell supplies several splash screens from which to choose, but they are all pretty weak. I would like to display a homegrown screen that shows our company logo.

The image format is xpm. I've tried several image conversion utilities on Sun Solaris, Mac and PC platforms, but none of the files that I create will display on screen. And, I can't get the Novell xpm files to display in these image editors.

Is there a method or utility that will let me create xpm files that display on the NetWare 5 server console?

Via the Internet

I checked with Novell, and they tell me that to prevent the Novell logo — server splash screen — from displaying, you can load SERVER with the no logo (-nl) command option. The graphics screen displays for 10 seconds while server components are loading in the background.

To substitute a different image for the current logo screen, place a file called nwlogo.bmp (for machines using a 256-color palette) or nwlogo16.bmp (for machines using a 16-color palette) in the same directory as server.exe. The file must be in .bmp format. BIOS limitations on the size and resolutions of the image are 640x480 pixels. The server will display the 256-color version, if possible; otherwise, the server will use the 16-color image. If neither is found in the directory, the server displays the default logo screen.

Begin with a simple image. As soon as that's working, gradually increase the image's complexity until you've got your desired version. My Novell contacts didn't indicate a preference for the tool used to create the image.

Switching software boosts IP telephony

By Chris Botting

Since the invention of the telephone, telecommunications equipment has been based on circuit technology, requiring a dedicated path between communicating endpoints. The equipment that traditionally has been used has been proprietary and expensive, and has required dedicated hardware.

One outcome of the collision of Internet technology with traditional telephony is the IP telephony switch: a software-only switch using packet technologies to perform functions similar to those performed by the traditional circuit network linked to commodity platforms.

An IP telephony software switch is designed to replace and/or augment any telecommunications device that uses circuit-based technology. Such a switch replaces dedicated circuit-switching hardware with IP switching technology.

An Intel Pentium II-class server, running Microsoft Windows NT 4.0 and using an IP telephony switch, is sufficient to process hundreds of simultaneous calls.

There are two major technology areas in telephone communications. The first is transmission: equipment and facilities related to a communications path connecting endpoints.

The second is switching: equipment that allows a path to be established, or routed, and rerouted. Switching equipment makes possible the delivery of call-control features such as call hold and three-way calling, while also providing access to peripheral equipment and services, such as voice mail.

Circuit switches comprise three distinct layers:

- A switching matrix, which physically or logically connects inputs and outputs.
- Call processing logic, which manages the set-up, progress and take-down of calls as well as the allocation and use of specific resources, such as tone senders and receivers.
- Software such as a PBX application for the corporate communications environment; Automatic Call Distribution for the call center environment; and Computer Telephony Integration, which controls call routing and data integration.

The end-user telecommunications infrastructure has been built with circuit switching technology. Out of necessity, the system has been built in highly centralized fashion, with "mainframe" switches handling the traffic of a company or location.

IP technology

The world's data communications infrastructure has developed a robust, inexpensive, highly efficient data communications protocol and supporting infrastructure based on IP, which is the basis for the Internet and the World Wide Web. IP communication involves the transmission of information in packets, or chunks, on an as-needed basis. The route a packet of information follows can and does change throughout the transaction, unlike the fixed path of a circuit.

Supporting transmission technology takes the form of packet switches, or call routers, that decide where data and voice are going on a packet-by-packet basis.

The cost advantage of using packet communications is so great that an entire industry has formed to translate circuit-based voice into packet voice, routing the transformed voice over the packet network and then converting it back into circuit-based voice.

The devices that transform voice back and forth between circuit and packet forms are called Internet telephony gateways. Internet telephony gateway technology allows data that was previously transmitted in the circuit domain to be transmitted in the packet domain.

In order to provide switching features for packet voice, packet transmission equipment must transform the voice packets back into circuit voice, using a gateway and routed to a circuit switch.

An IP telephony switch can enable communication in the packet domain by performing the switching features and functions previously only seen in the circuit domain.

With a software-only IP telephony switch, the call processing and switching can be distributed across a set of servers, achieving high levels of availability and scalability.

IP telephony is based on the International Telecommunications Union's standards H.323 and T.120. H.323 defines audio and, optionally, video communications using IP. T.120 defines interactive IP data collaboration.

A software-only, IP telephony switch supporting H.323 and T.120 provides connectivity to H.323 endpoints, such as Internet telephony gateways or multimedia PCs, and phones based on H.323 specifications. The switch manages call connections, call set-up and call take-down, and provides features such as call hold and call conference.

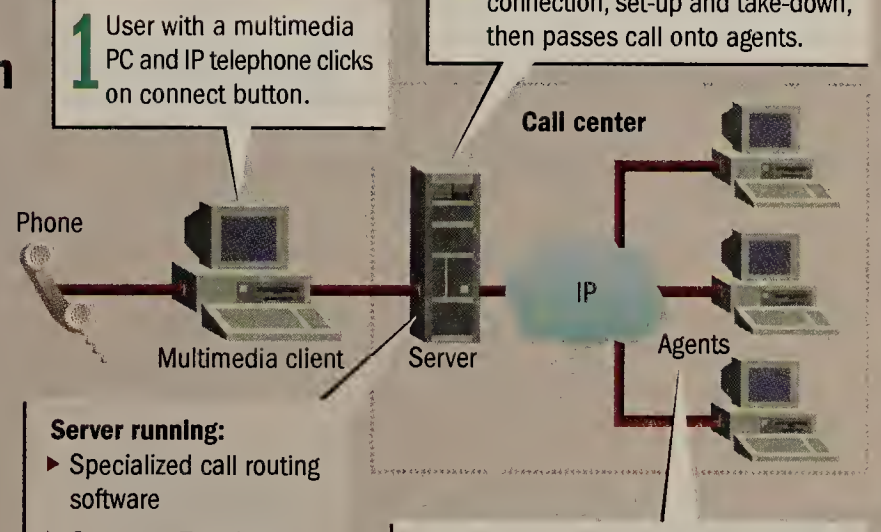
Applications that take advantage of this software switch are beginning to appear. Switch vendor PakNetX, for example, has an automatic call distribution application for Internet telephony call centers.

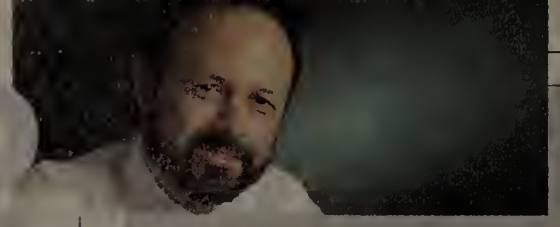
Botting is vice president of marketing and a co-founder of PakNetX in Salem, N.H. He can be reached at cbotting@paknetx.com.

HOW IT WORKS

IP telephony software switch

For many businesses, migrating traditional telephone traffic to an IP net could save significantly on communication costs. IP telephony switches can easily manage call connections, call set-up and call take-down, as well as provide features such as call hold and retrieve, call transfer and call conferencing for small to mid-size call centers.





EDITORIAL *insights*

A challenge to the top frame relay service providers

If you regularly read this column, you know we're planning to stage a Showdown in January among the top frame relay service providers at the ComNet conference in Washington, D.C.

Who's participating? I'm challenging AT&T, MCI WorldCom, Sprint, Bell Atlantic, US WEST and Intermedia to send a CEO or senior technical executive to take part in this presidential-style debate, which will be held at 1:30 p.m. on Tuesday, Jan. 26.

The companies have until Wednesday, Dec. 9, to confirm their participation in the Showdown. If a service provider declines to get up on the podium and address customer concerns, we'll happily invite one its rivals that didn't make the initial cut.

How did I pick the participants for the Frame Relay Showdown? As you might suspect, any choice of providers is a subjective one. But these companies appear to be the leading local and national frame relay service providers based on market-share numbers and input from analysts and readers.

During the Showdown, the companies first will face questions from a panel of experts, including: David Rohde, a *Network World* senior editor covering the frame relay market; Steve Bell, founder of the Silicon Valley Networking Lab, a leading test and consulting organization on the West Coast; and Atul Kapoor, a highly respected network analyst with The Tolly Group in Manasquan, N.J.

Then, our intrepid vendor executives will get to fire away at each other before fielding questions from the audience. This keynote-level session at ComNet will draw a big crowd, and it should provide valuable insights into the future of the frame relay market.

While six service providers is a large group of participants, I'm open to adding another provider if readers show an interest. Is there a company you'd like to see represented that I've passed over? For example, should we add one of the big international providers of frame relay, such as Equant or Infonet?

Drop me a line with your thoughts on that, along with questions you'd like our panel of experts to ask the service providers.

But, for now, we await the vendor responses. AT&T, MCI WorldCom, Sprint, Bell Atlantic, US WEST and Intermedia: Are you up to the challenge? Will you take part in the Frame Relay Showdown?

John Gallant, editor in chief jgallant@nww.com

Intranet Advisor • Daniel Blum

'Halloween' memo reveals Microsoft behind the mask

In a now notorious internal competitive analysis of Linux and NT called the Halloween Document, Microsoft admits that "Linux can win as long as services/protocols are commodities." Linux and other distributed development efforts benefit from the existence of open and simple commodity protocols, such as SMTP and HTTP, that enable programs developed by multiple vendors across different platforms to work together.

Simple, open protocols and applications have resulted in the phenomenal Internet/intranet successes that have increased networking's value to corporations. Microsoft has been part of the success story. Alarmed by the success of Netscape and other vendors, Microsoft's top priority last year was to build Internet standards support into its products. But at last month's Professional Developer's Conference, Bill Gates made a very important statement that most of the press seems to have missed: He declared that Microsoft's priority has shifted to simplicity. Gates attributed the shift to customer feedback. But might there also be another, hidden agenda? Does this mean that the "embrace" part of "embrace and extend" is over, and the "extend" part (decommoditization) is under way?

The Halloween Document (www.opensource.org/halloween1.html) plainly says that Microsoft's strategy is to win by decommoditizing protocols and services, essentially by extending them in a proprietary manner. This glimpse of the monster behind the mask only confirms what most of us already know or have suspected about Microsoft.

It's nothing new for vendors to pursue proprietary strategies that lock in customers and lock out competitors. But only Microsoft may have the clout to lessen the value of standards such as HTML and Java by wrapping them in the Component Object Model (COM), Extensible Markup Language (XML) a la Redmond, Win32 APIs and other extensions. If commoditized protocols go by the wayside, we'll all suffer from reduced choices and higher prices. More than Linux would be derailed: The entire IETF train, so effective in promoting standards, could run off the track.

However, you can defend yourself against decommoditization while still leveraging some benefits of Microsoft's integration and innovation. The key is to distinguish between products that: (1) add genuine value by building on and integrating standards; (2) add new value where no standards have gone before; or (3) seem to depart from the open path for no compelling reason.

For example, consider the planned NT 5.0 Domain Controller support for Lightweight Directory Access Protocol (LDAP), Domain Name System, public-key authentication and Kerberos. The product, which follows relatively mature standards, provides value to your infrastructure by enabling single sign-on and improving automated, policy-based management of desktops and services. This should reduce cost of ownership and extend your ability to deploy valuable applications. Other vendors, such as Novell and Sun, have or are expected to move in a similar direction on infrastructure, and third-party developers will fall in line.

In policy-based networking, Microsoft is helping users by driving standards where few have been set before. Techniques to improve quality of service, institute chargeback for real-time multimedia networking and extend secure, intelligent networking to trading partners were all the rage at this fall's Networld+Interop show. These goals will be facilitated by the integration of Microsoft's Active Directory with Cisco routers using standards such as LDAP, Directory Enabled Network and IP Security.

But in the middleware area — in which Microsoft's offerings include SQL Server, Internet Information Server, Transaction Server and Message Queuing Server — Microsoft's strategy seems to depart from well-trodden standards paths in a self-serving way. Still unable to compete on a level playing field with the likes of Sun, IBM and Oracle, Microsoft is replacing or corrupting established standards, such as the Common Object Request Broker Architecture, Java and basic HTML. Chaos will reign in this area for the near future.

In the end, there will be good standards, bad standards and Microsoft standards. There will be some differences among experts as to which are which, and your company may call the plays different than I have just now. But even if you can't research all the standards, at least keep your network diverse enough to leave the door open for innovation. When the Microsoft salesman says, "Trick or treat," reply, "Show me the interoperability."

Blum is a senior vice president and principal consultant with The Burton Group, an IT advisory service providing in-depth analysis for network planners. He can be reached at dblum@tbg.com.

MESSAGE QUEUE

Send letters to nwnews@nuw.com or John Gallant, editor in chief, Network World, 161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification

The line on Linux

Editor's note: Our article "Linux cynics" (Nov. 9, page 1), which presented the views of some in the industry who look upon Linux with a skeptical eye, pushed the buttons of many readers. Here are some of their comments.

My organization has been using Linux for a couple of years, and we find it to be the most reliable operating systems we've seen.

Our Linux mail and DNS server has been running since 1996 without a second of unplanned downtime. (We did have some planned downtime for upgrades and equipment moves.)

Your article cited a number of absurd comments from random Linux bashers, which would be amusing if not for the fact that some pointy-haired boss could actually take them seriously.

Here are some of the worst groaners:

- Linux is maintained by 17-year-olds (from David Cole). If you look into the credentials of those who have contributed to Linux development, you'll find a high proportion of middle-aged engineers and programmers with advanced degrees. There are some developers in their 20s as well, but they are by no means the typical developers.
- Linux is unlikely to "see the light of day" in the corporate environment anytime soon (from Frank Buechler). Mr. Buechler will be shocked to find that Linux is already considered a tier-one Unix variant in a number of large corporations.

Without all the hype and fanfare of the over-promoted Microsoft offerings, Linux has been quietly proving itself and winning the respect of IT professionals.

- Linux may not support 5-year-old hardware (from Tom Connors). This is particularly ironic because Linux is responsible for making old hardware usable again. I have no problem using my Pro Audio Spectrum 16 Sound Card/SCSI controller in Linux, but good luck trying to use it in Windows 95/98/2000.

Various other anti-Linux sentiments were expressed one after the other, with nary a dissenting word. Well, I guess the lynch mob has reached its verdict: Linux is bad, and it's going nowhere. Nah, I don't think so.

Joseph Sloan
Torrance, Calif.

Skeptics will abound as long as misconceptions about Linux continue. Unfortunately, your article contributes to this confusion.

First, you refer to Linux as freeware. Then, later in the article, you refer to it as shareware. Both references are wrong.

Linux is a free, open source operating system. The greatest challenge it faces is from people who cannot understand this model and, therefore, try to tag Linux with existing labels, as your article has.

Second, most Linux advocates will admit that the desktop is territory for which Linux isn't quite ready. But when it comes to the server arena, Linux was/is/will be the operating system of choice.

Servers shouldn't be run by newbies and shouldn't have a graphical shell (too much overhead). They should be fast, stable and scalable — three things that Linux is and NT isn't.

And last but not least, Microsoft bashing is not something usually done because it's the "in thing" to do. Many of us who promote Linux over Microsoft products do so because we've been burned so many times by Microsoft that it's hard not to be bitter. On the flip side, we've had such good luck with Linux that it's what we use.

Larry Norris
Oklahoma City

In case you missed it, even Microsoft recognizes Linux as a major threat (see www.opensource.org/halloween.html).

As for the quote "No business in this country is going to wait for a 17-year-old beatnik to [answer its newsgroup post and] fix its problem:" In more than a dozen years as a computer professional, I have found that more often than not, when I can't figure something out and have to call tech support, they generally can't help me. I end up waiting hours for a higher level person to return my call.

As far as waiting for a newsgroup response, I don't care if it is a 17-year-old beatnik or an entry-level support dolt following a flow chart — I just want an answer.

I believe Linux currently has definite pockets of use, beyond the anti-Microsoft legions.

I am in the process of setting up a Linux proxy server. At a savings of tens of thousands of dollars in hardware and software compared with

Microsoft products, Linux offers real value to a small company.

Brian Tuley
IS director
Egger Steel
Sioux Falls, S.D.

Congratulations on a masterful job of collecting all the fear, uncertainty and doubt, or FUD, surrounding Linux. I am working on a paper titled "FUD 101," and your story provided many examples and also inspired me to add a new section called Distraction Techniques (see www.linuxhw.com/eric/fud101.html).

Eric Lee Green
Technical director
Linux Hardware Solutions
Wilmington, N.C.

I read the article on Linux, and I was surprised at how many people seem not to know that Linux is supported. Recently a magazine rated Linux No. 1 in support and cited Red Hat Software among the best in support.

Red Hat now has a program that government agencies and companies that must have support can sign up for, though I feel this is not necessary.

Linux is documented all the way down to the bit if you care to look at the source code. If you don't like how something was written, rewrite it and submit it — you may become one of the Linux source code authors.

Installing Linux is also a straightforward process. Some government employees I talked to recently said that Linux was easier than NT to get working and that the documentation was much better. They felt that Microsoft's help line was of little help.

Robert Thomas
Internet security specialist
Micro Technologies Group
Huntingtown, Md.

Preaching to the choir

The following letters concern Mark Gibbs' columns, "Sermon on Linux," parts 1 (Oct. 26, page 72) and 2 (Nov. 2, page 74):

I teach Web-related techniques, and although I personally like to use Linux, the corporate hierarchy pushes NT down its employees' throats.

Linux is a bottom-up system decision, not a top-down one. It's simply easier to administrate.

As Eric Raymond's recent "Halloween Document" suggests, the Microsoft think-tankers are trying to figure out clever ways to divide and conquer, but I hope they fall on their faces.

The stability of Linux is a shining example of what a system should do for you, whereas my NT 4 Server is forever plagued by inscrutable bugs.

Andy Deck
Lecturer, Information Technologies
New York University
New York

I can sum up in one word why my organization is unlikely to switch to Linux: training.

I sat down at a Linux workstation (I had never seen the operating system up close until that point), and I was completely lost. I could not figure out how to launch a program easily, and when I did get it up, I found my only way to get out was to close the session entirely.

Furthermore, my users will not go quietly to a new system. While I may want to play around with other operating systems for my own edification, my users will say, "Halt and go no further."

Joseph Friday
LAN manager, Design and Construction Management
University of Kansas
Lawrence

Linux is dead on the desktop as a competitor for NT unless Microsoft ports Office and other applications to Linux. Think there is a chance of that happening?

Bill Topp
Biotechnology Associates
Otisville, N.Y.

Three years ago, I began talking about Linux to executives at the company where I worked at that time. Most were unaware of Linux and could not stop laughing when they heard it could be downloaded over the Internet.

Ignorance is a fundamental force that will keep Linux out of corporations for the immediate future.

This will change only when, like the PC revolution, the movement gets so big that it cannot be ignored.

I predict the operating system market will fragment much the way the auto industry has. There will be a large number of niche markets, each with its own operating system of choice. Linux will have a prominent place in the small server market.

Stephen Funk
Owner
Master Design
Lansing, Mich.

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FEATURE

A LOOK INSIDE THE VENDOR LABS WHERE MILLIONS OF DOLLARS IN HIGH-TECH BETS ARE PLACED.

Research roulette

By Neal Weinberg

RICH BORGE

Building 29 on the Sun Microsystems campus looks nondescript; just another generic, high-tech bunker divvied up into no-frills cubicles. The only tip-off that strange and exciting things may be happening inside is that meeting rooms are named after famous explorers and scientists, among them Darwin, Galileo and Magellan.

In one second-floor office, researcher Russell Kao is exploring the world of CAD tools for custom chip design. Kao has a unique perspective on his task. Because of a bad back, he lies flat on the carpet, feet sticking out toward the center of the room, keyboard propped above his waist, eyes staring up at a monitor mounted on a homemade wooden frame above his head.

In a small meeting room down the hall, principal investigator Neil Wilhelm, clad in bicycle pants and plaid flannel shirt, sits at a table discussing with two colleagues a project to embed a lightweight version of Java into handheld devices. At random intervals a disc-shaped rubber toy stuck to the table shoots up toward the ceiling. Wilhelm plucks it out of the air, slaps it back down on the table — in a spot not already occupied by the large rubber snake — and the conversation continues.

Elsewhere, researchers are poking around in esoteric areas such as asynchronous, or "unclocked," circuits; persistent objects; 3-D graphics; Web-based smart card readers; electronic money; multicast network protocols; and ATM network control platforms.

RESEARCH PROFILE: Sun Microsystems

1998 revenue:	$9.8 billion
R&D budget:	$1 billion
% of revenue for R&D:	10%
Number of employees In research lab:	240
Successes:	Java programming language, Netra server software, clustering technology
Interesting projects:	Asychronous circuits, 3-D graphics, persistent objects

Welcome to Sun Laboratories, or SunLabs, where 100 of the most inquisitive minds from academia and the computer industry conduct research that they hope will lead to product breakthroughs three to five years into the future.

Similar to IBM and Lucent, two companies with large research organizations, Sun takes the do-it-yourself approach to technology innovation. The company spends $1 billion per year on R&D, primarily to fund the efforts of 5,000 engineers who push products out the door. But Sun also invests millions (the company won't say exactly how much) in SunLabs, a small enclave shielded from the pressures of 12- to 18-month product cycles.

At the other end of the spectrum are companies such as Cisco, which also spent $1 billion in fiscal 1998 on R&D and plans to spend $1.4 billion in 1999. Cisco has no "pure," blue-sky research organization. Rather, when Cisco invests research dollars, it has a specific product in mind. The company relies on acquisitions to take the place of pure research; in effect, start-ups are Cisco's lab.

No matter how companies approach research, they all face tremendous market pressure to produce products faster. At companies with advanced research labs, this has meant a weakening of the traditional separation between basic research and product development. As Nortel Networks CEO John Roth puts it: "We've moved to a business model where research and development are no longer separate functions removed from the business. Everything that's being done has to go out to the marketplace, otherwise we shouldn't do it."

Playing it cool at SunLabs

At Sun, Bert Sutherland, who helped create SunLabs in 1990, says he has "fiercely resisted" having people on the product side dictate what projects the lab pursues. The advanced research group, which consists primarily of engineers but is also sprinkled with a sociologist, a medical doctor and a CPA, operates in a semiacademic atmosphere. It's a place where taking risks is the name of the game and where failure is an option.

In fact, Sutherland says he expects half of the projects to fail, although he's quick to point out there is value even in projects that do not result in marketable products. There is often

Continued on page 44

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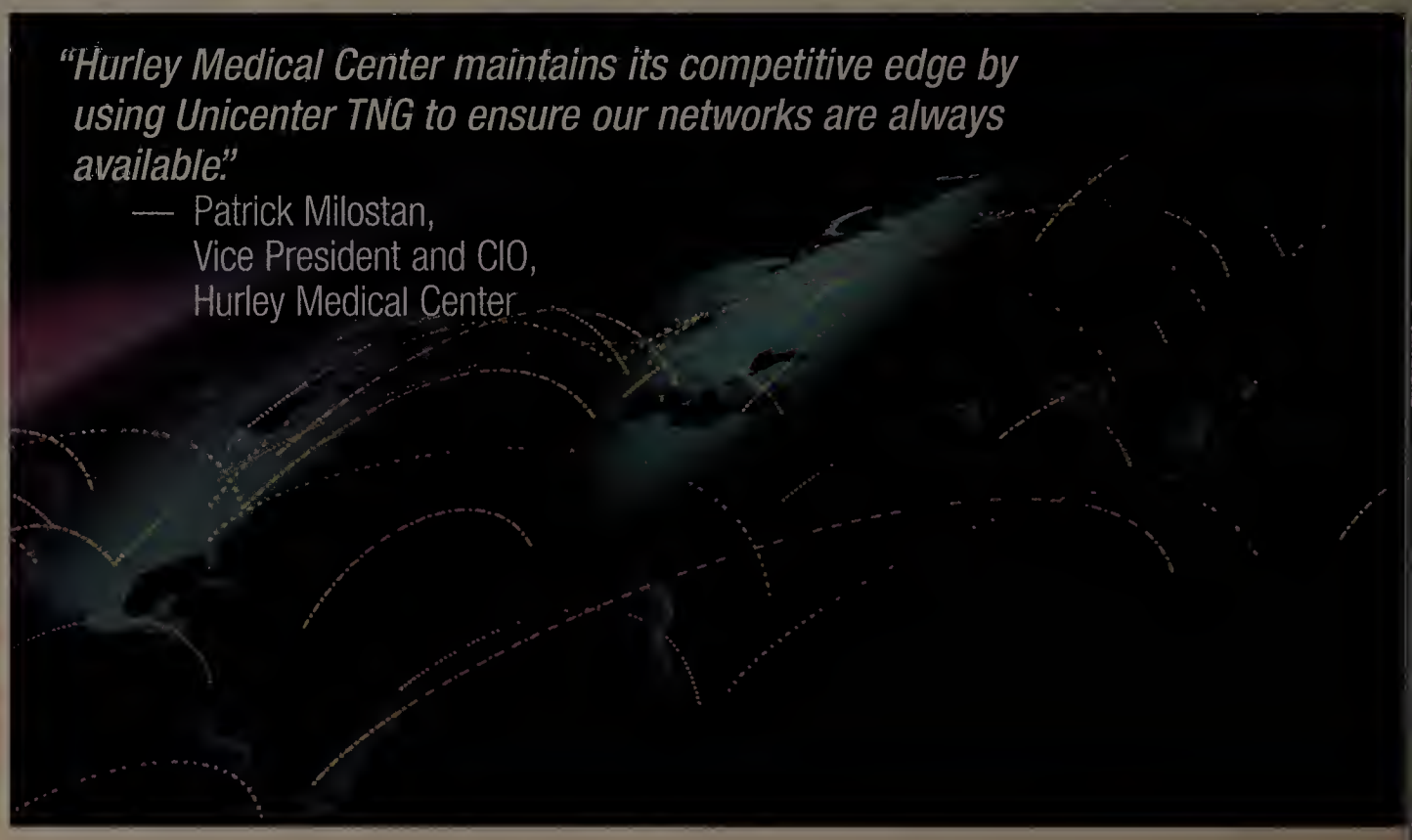

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Continued from page 41

some component of the research that can be used elsewhere, and the projects help the company avoid going down a technological dead end. "We make the company's technical mistakes early, while they're still cheap," he says.

For example, SunLabs made a foray into ATM but couldn't get it to work properly. So Sun's internal networks now use Gigabit Ethernet for high-bandwidth needs.

SunLabs' relationship to the rest of the company mirrors the atmosphere inside Building 29 — informal and loose. The genesis of a research project could be something as amorphous as CEO Scott McNealy telling Sutherland, "You know, security is a real problem that the lab should look into."

Projects are also launched in response to a request from a product group, a case in point being Kao's work on improved CAD tools. Ideas likewise come from the researchers themselves, as did the project to embed Java in handheld devices.

ED CALDWELL

Due to his bad back, *SunLabs engineer Russell Kao is forced to take a unique perspective on his work, which involves developing new tools for custom chip design.*

Or a project could be an investigation into one of Sutherland's pet areas, such as the economics of internal corporate computer networks. For that project, Sutherland enticed the controller of Sun's internal network, a CPA, to join SunLabs and lead the group. Sutherland's marching orders were: "Look into this area and be creative."

The group began looking into ways to impress upon employees the cost of various business resources, whether it's sending an e-mail with a large attachment across the world or attending an internal training program. The group came up with digital tokens, a form of smart card that is now being used in a pilot program inside SunLabs. For example, at the beginning of each year, each employee's digital token is programmed with a dollar figure equal to the training budget allotted to that employee. When the employee takes a training course, the course's value is deducted from the employee's electronic account.

The same research group was looking into authentication issues and came up with a Java smart card that can be used for secure access to a company's Web site. "That was an entirely unanticipated outcome of the work we started three to four years ago in economics," Sutherland says.

That's the beauty of a place such as SunLabs, where researchers have the time and freedom to pursue ideas even though they may have no idea what products will bubble up to the surface.

However, Sutherland emphasizes that SunLabs does not do the kind of pure research conducted on college campuses. "This is not an ivory tower where you come and retire as a fuzzy-haired scientist for the rest of your career," he says.

For a project to go forward, it has to meet certain criteria. "The first thing I need is a good, novel idea that's relevant for the company," Sutherland says. The researcher has to be able to answer the question, "How does it matter to Sun?"

Beyond that, Sutherland says he needs "a champion" to run the project and to recruit other people. "It's somebody who can stand up and say, 'Yup, the next two years of my life are devoted to this one.' "

Finally, he needs a critical mass of researchers who have enough intellectual firepower to get the job done in a reasonable amount of time. Sutherland likes to have project teams of at least three people but not more than eight, and he prefers short projects over long ones.

Ultimately, Sutherland decides what projects go forward. The product divisions within Sun can make requests, but "the lab has very carefully reserved the right to choose the things it will work on." The reason is simple: If Sutherland has an expert who can take on a specific project, or if he is confident he can recruit one, he'll accommodate a request from a product group; otherwise, he just says no.

ED CALDWELL

SunLab's Bert Sutherland *sometimes has to hold his tongue "because a boss can pour a lot of cold water on a little tender spark of an idea."*

Take the ball and run with it

Once a team is up and running, Sutherland gives the researchers plenty of slack. Teams are required to submit progress reports, and Sutherland is always around for consultation, but he tries to manage with a light hand. "Sometimes people are doing things I wouldn't do, but lots of times I hold my tongue and don't criticize because a boss can pour a lot of cold water on a little tender spark of an idea."

Just as the method for generating and overseeing projects is relatively unstructured, so is the way research projects become commercial products. Rather than establish a formal technology transfer process, SunLabs relies on personal contact and events such as an annual open house to pitch its research efforts to the product groups.

And researchers have the opportunity to move into the product divisions along with their innovations. For example, Kao says he's prepared to move with the tool he's creating. "I'm looking forward to it. I want to see the stuff get used," he says.

About 100 people from SunLabs have transferred into Sun product groups over the past eight years, and many have also come back.

But SunLabs' arms-length relationship to the company appears to be changing. Shortly after *Network World* visited SunLabs, Greg Papadopoulos, Sun's new chief technology officer, replaced Sutherland as director of SunLabs and began a reorganization aimed at a tighter alignment between SunLabs and the product groups. Sutherland has become director emeritus at SunLabs and is an advisor to Sun's senior staff.

Papadopoulos combined the 100 SunLabs researchers and 140 advanced development researchers from the various business units into one team flying the SunLabs banner. He reorganized SunLabs into three areas that reflect the company's core competencies: networking and security, large-scale systems, and applications and services.

He also hired a director of advanced projects to add a marketing perspective to the research group. "We don't want to mess up the formula," Papadopoulos says. "We're just trying to bring in some market understanding."

A new age for Bell Labs

There are few places in which the struggle between advanced research and market forces plays out on a greater scale than at Lucent, which inherited Bell Labs in the 1996 AT&T breakup.

Founded in 1925, Bell Labs holds a total of 26,000 patents. Eleven Bell Labs scientists have won the Nobel Prize in physics, including Arno Penzias and Robert Wilson, who discovered the background noise from the Big Bang. Bell Labs is credited with pioneering work in transistors, lasers, digital switching, solar cells and cellular mobile radio. It developed the first 32-bit chip and the Unix operating system.

Under AT&T's paternalistic management, Bell Labs had the luxury of operating as a relatively independent research lab. Being thrown into a tough, competitive business has forced Lucent to make "big changes" in the way Bell Labs operates, says Melvin Cohen, a 34-year Bell Labs veteran who is currently vice presi-

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dent of research effectiveness.

For starters, Lucent management decided to limit spending on pure research to 1% of revenue, or about $300 million. That's less than AT&T spent, but Lucent only took 75% of Bell Labs, while AT&T retained the other 25%.

Under Lucent, the types of projects researchers work on are more closely aligned with the company's overall strategic direction. For example, Lucent quickly realized it lacked data networking products, so "we made a conscious decision to fill that gap," Cohen says. The result has been products such as the PacketStar IP switch, PathStar Access Server, Lucent Managed Firewall and LifeStar Optical Network System.

ED CALDWELL

Rubber discs *periodically popping from their perches next to a rubber reptile don't stop SunLabs' Neil Wilhelm, William Bush and Antero Taivalsaari (left to right) from discussing serious research topics.*

For the first time, researchers are required to leave their cloistered labs and visit with customers. And there is a tighter alignment between researchers and product groups, so "the transfer of technology to the business units happens faster," Cohen says.

When Lucent analyzed what the Bell Labs researchers were doing, they found that half of them were working on small joint projects with engineers from the product groups. Lucent reduced the number of joint projects to focus on just a handful, called breakthrough projects. Breakthrough products are those that offer the promise of "creating a big-time difference in the fortunes of that business unit," Cohen says.

The sky's the limit

That's not to say Bell Labs scientists don't do any blue-sky research. Work in biological physics, in which Bell Labs boasts the top department in the world, is ongoing. Cohen says the work may not result in products in the near future, but it's compatible with the lab's mission of advancing the understanding of how the brain works and how organisms communicate.

Real-world advances in those areas may not be that far off. Scientists at Bell Labs are developing chips that mimic the way the human brain receives and stores information. This research on electronic neural networks could lead to machines capable of visual perception and speech recognition.

Bell Labs is also working on systems that can translate information from one language to another in real time, telephones that can understand human speech, wireless data, superconductivity and optical fiber that can transmit a trillion bits per second.

Cohen says Bell Labs scientists have become "energized" by new entrepreneurial opportunities at Lucent, which simply didn't exist under AT&T. If researchers come up with new technology that doesn't mesh with Lucent's product line, there's a formal procedure for channeling that research into a new business venture.

Thus far, Lucent has created nine of these spinoff companies, including Inferno, which sells a network operating system that can link any device over any type of network; Elemedia, which sells Internet telephony software; Veridicom, which markets fingerprint authentication devices; Global Cast, which is developing multicast technology for the Internet; and Visual Insights, which does a type of data mining.

Common ground

One thing research organizations of all stripes share is an academically rooted insistence on making their work public. Sun and Microsoft may be the most bitter of competitors, battling it out in court over Java, but both put their advanced research projects on the World Wide Web for the world to see.

RESEARCH PROFILE: Lucent

1998 revenue:	$30 billion
R&D budget:	$4.5 billion
% of revenue for R&D:	15%
Number of employees in research lab:	3,000
Successes:	Unix, 32-bit chip, laser technology
Interesting projects:	Electronic neural networks, phones that respond to voice commands, computational methods to analyze the performance of products under development

Trying to keep research projects secret would be "a really short-sighted way of looking at things," says James Kajiya, assistant director of Microsoft Research. "When that happens, progress in the field peters out very quickly."

Sun's Sutherland adds that by publicizing its research, SunLabs "can get lots of other people to tell us we're crazy and to find bugs in the software."

"By and large we run an open activity," he adds. As for the concern that other companies will steal SunLabs' ideas, Sutherland says, "It's up to Sun to run fast. We have to count on the company's initiative and speed and nimbleness and flexibility" to turn SunLabs' ideas into the Javas of the future.

Weinberg is Network World's *features reporter. He can be reached at neal_weinberg@nww.com.*

Gerstner goes for the long term

When Lou Gerstner took over five years ago as chairman and CEO at IBM, the company was losing money and drastic steps were called for. As part of a sweeping reorganization, he slashed the company's research and development budget from $6 billion to $5 billion. He took a 37% bite out of the corporate research lab, reducing funding from $650 million to $475 million and trimming its work force from 3,500 to 2,500.

But Gerstner spared funding for long-term projects from the budget ax, emphasizing that advanced research was the cornerstone of the company's success.

As IBM's fortunes rebounded, so did its financial investment in IBM Research. The group is up to 2,900 employees and has an annual budget of $600 million.

But any ivory-tower attitudes that may once have existed are long gone. Researchers now spend time with customers and will take on the development of a new product specifically in response to customer requests.

For example, researchers in natural language and knowledge-based systems are working for a bank to develop software that will route incoming e-mails to the appropriate bank department.

IBM also has a new way of transferring technology from researchers to product developers that is similar to the SunLabs model. In the past, the researchers would develop technology to a certain point and then hand it off to the product teams. But within the past five years, a new approach has been adopted in which a mixed team of advanced researchers and product engineers works together until a commercial product is introduced. The product gets to market faster, and the researchers "learn about issues that they wouldn't learn about if they were just researchers," says Paul Horn, director of IBM Research.

To sum up, he says exploratory programs into highly experimental areas have survived, while at the same time, IBM Research now feels "a marketplace pull" to go along with its technology push.

RESEARCH PROFILE: IBM

***1997 revenue:**	$78.5 billion
R&D budget:	$5.5 billion
% of revenue for R&D:	7%
Number of employees in research lab:	2,900
Research lab budget:	$600 million
Successes:	Deep Blue (chess-playing RS/6000), ViaVoice speech recognition software, eSuite, Java-based personal productivity software suite
Interesting projects:	Copper microchips, superconductivity, personal-area networks

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— Neal Weinberg

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REVIEW

HOT COLDFUSION 4.0 KNOCKS OUT ACTIVE SERVER PAGES 2.0 FOR DYNAMIC SITE DEVELOPMENT.

Web page development heavyweight rematch

By Thomas Powell

Allaire's ColdFusion and Microsoft's Active Server Pages (ASP) are two high-end tools contesting for market share in the professional Web application development arena. Last December, we gave the championship belt to ASP's integrated development environment (IDE), Visual InterDev 1.0, on the strength of its superb database tools and its short learning curve. In the summer, Microsoft came out with Version 6.0 of Visual InterDev. Now this month's release of ColdFusion 4.0 sets the stage for a rematch in this battle of the heavyweights.

Product: ColdFusion Server 4.0, ColdFusion Studio 4.0

Vendor: Allaire

NetworkWorld Blue Ribbon

Superb HTML code editing and database connectivity functions, combined with an improved application server, earn ColdFusion 4.0 our Blue Ribbon award.

After working with both development environments, we found that Visual InterDev excels in management of the site development process and scripting. But ColdFusion Studio, Allaire's IDE for ColdFusion, has the edge over Visual InterDev with respect to HTML coding and basic database integration. This time, ColdFusion's improved coding tools and database connectivity features make it the overall winner.

ColdFusion and ASP consist of two primary parts that work together to produce server-parsed HTML — an IDE and an application server. Pages created by the IDE consist of a mixture of HTML and proprietary tags, or script code. When a user requests a page, a special application server evaluates the code and delivers the resulting HTML page to the user.

Both products let you create pages manually, using textual HTML tags, or visually, with a graphical user interface. In both cases, you can use third-party tools instead of the vendor's bundled IDE to build Web applications. For example, Elemental Software's Drumbeat provides a simple approach to creating ASPs, while NetObject's Fusion provides options for ColdFusion and ASP integration.

Development environments

The core aspect of ColdFusion Studio and Visual InterDev is their HTML editing capability. Both editors provide a passable WYSIWYG design mode based on Microsoft's DHTMLEdit component, which requires you to install Internet Explorer 4.01.

We suggest avoiding visual development mode. Code generated in both products' visual mode may not comply strictly with HTML specifications. Worse yet, Visual InterDev often outputs logical tags such as <STRONG> when you press a bolding button. Logical tags don't guarantee a particular visual representation such as bolding under different browsers.

Fortunately, if you hand-code a page and later edit it in a visual mode, both products preserve most formatting and style. This lets you use visual tools to make quick edits. Still, many developers will probably stick to code editing to produce pages. When it comes to coding, the two products look superficially similar. Both support raw text entry, navigation of a page's HTML tag tree and tag inspection dialogs that let you modify attributes.

ColdFusion Studio, based on Allaire's popular HomeSite editor, is one of the best HTML coding editors available. ColdFusion 4.0 supports on-the-fly typing validation and includes a validation tool to provide document type definition conformance and basic syntax checking. Unfortunately, ColdFusion's on-the-fly validator is far from perfect and catches only basic errors. For example, <H1 BOGUS="FALSE"> validates during on-the-fly validation, but it is caught by the validation tool.

Visual InterDev's coding editor, on the other hand, lacks any code validation capabilities. It is also missing many other basic HTML editing features that professional Web developers want, such as the simple ability to force tags to be entered in uppercase rather than lowercase.

Both products can display a tag tree that lets you inspect tag attributes and events, but ColdFusion Studio does the job better. In ColdFusion Studio you can group tag attributes alphabetically ascending or descending, categorized by type or categorized by version, and you can even add custom tags and attributes. Visual InterDev sorts tag properties in only basic ways and focuses on a Microsoft browser-specific view of HTML.

ColdFusion Studio supports a number of languages in addition to HTML and its own ColdFusion Markup Language, including Handheld Device Markup Language and Synchronized Multimedia Integration Language, which is used in RealMedia's G2 products. Visual InterDev lacks immediate support for other languages. While it is extensible, it's not easy to add support for new tags.

Adding tags and attributes to ColdFusion Studio is extremely easy for even a casual user via Visual Tool Markup Language (VTML), which provides facilities to include tag-editing dialogs. The ability to add new languages makes it

Score Card

	NetworkWorld Blue Ribbon	Coding tools (25%)	Database connectivity (25%)	Application server scalability and extensibility (20%)	Visual page editing (10%)	Collaborative development features (10%)	Site management tools (10%)	Total score
ColdFusion		10 x .25 = 2.50	9 x .25 = 2.25	9 x .20 = 1.80	7 x .10 = 0.70	6 x .10 = 0.60	7 x .10 = 0.70	8.55
Visual InterDev		6 x .25 = 1.50	7 x .25 = 1.75	7 x .20 = 1.40	7 x .10 = 0.70	8 x .10 = 0.80	8 x .10 = 0.80	6.95

Individual category scores are based on a scale of 1 to 10. **Percentages** are the weight given each category in determining the **total score.**

easy to add Extensible Markup Language (XML) capabilities to ColdFusion Studio. Visual InterDev does not easily support the addition of new tag sets or XML vocabularies but can be extended using an associated software development kit.

Both products now support Cascading Style Sheets (CSS), although neither does so particularly well. ColdFusion Studio's CSS editor is a separate program, and moving between it and Studio is clumsy. Visual InterDev is integrated slightly better and provides many style-sheet properties directly within its tag inspector.

Unlike ColdFusion Studio, Visual InterDev provides themes and layouts, leveraging both CSS and HTML to apply a consistent look to many pages. While this feature is well-designed, it seems more appropriate for a mass-market Web design application, such as FrontPage; the high-end site designers who are likely to use Visual InterDev may disdain such features as fluff.

Because of its flexibility in tag editing, its attention to coding details and cross-browser HTML support, ColdFusion Studio is better at raw HTML page editing, but Visual InterDev excels at site development and programming. Visual InterDev provides powerful site diagramming and link management tools. We found it easy to visually locate link problems and build site structure with Visual InterDev. ColdFusion's link management utility works only on a page-by-page basis, and ColdFusion lacks site diagramming.

Both tools provide support for team-based source code control for site development using Microsoft's Visual Source Safe. Both products also use the concept of a project to control groups of files and to allow easy deployment to staging and production servers. One particularly helpful feature of Visual InterDev is its support for local and remote development of entire sites. While you could accomplish similar tasks with ColdFusion Studio, it would require manually downloading sites and using source code control to synchronize files. Visual InterDev also includes a task list manager to store to-do information that may be useful when building a complex site.

Scripting vs. tagging

Philosophically, ColdFusion Server and Active Server Pages take different approaches to creating dynamic content, though both can be used to create dynamic Web pages from a mixture of HTML and proprietary tags or scripting code.

ColdFusion uses a set of proprietary tags, such as <CFQUERY>, to create dynamic pages. In the past, developers criticized ColdFusion because its tagging approach, in which programming structures are enclosed in HTML-style tags, was clumsy for certain tasks.

Rather than proprietary tags, Active Server Pages uses scripts in a Web page — generally VBScript or Microsoft's variant of JavaScript, called Jscript. That gives Active Server Pages the flexibility inherent in a full-fledged scripting language. On the downside, script code is mixed with HTML tags, which can be messy to maintain. Often, a lot of VBScript is required to perform tasks for which ColdFusion provides a single proprietary set of tags.

ColdFusion 4.0 offers new scripting capabilities using the <CFSCRIPT> tag. Additionally, ColdFusion Markup Language has been extended to provide associated arrays, case and switch statements and error handling, which make coding applications less clumsy than before. In short, with ColdFusion 4.0, Allaire provides the best of both worlds — easy, tag-oriented dynamic pages for simple tasks and script use when more complex coding is required.

Visual InterDev has tried to combat complexity by forgoing proprietary tags altogether and adding some simple drag-and-drop components, called design time controls. With these, binding data items to database connectivity, building site navigation and adding logic to form controls is fairly straightforward, though the underlying complexity is significant, particularly when you're trying to integrate a database with a Web site.

For example, it took us only two custom tags and a SQL statement to develop a simple phone directory application in ColdFusion. With Visual InterDev, we generated nearly 100 lines of ASP code, not counting all the included files referenced. This may not seem to matter because both programs generate their own code, until you consider that someone is going to have to extend or maintain the generated code.

In many ways, Visual InterDev is more of a traditional programmer's tool than ColdFusion Studio. It has significant support for building JavaScript- and VBScript-based pages and provides a feature called IntelliSense, which can complete script statements and provide syntax tips. The product also provides a script-outline feature that makes it easy to modify client- and server-side objects. In this sense, Visual InterDev embraces the document object model style of DHTML much more than does ColdFusion Studio.

Visual InterDev and ColdFusion Studio now support complex debugging as well as powerful SQL query-building tools to ease database integration. This is a welcome improvement for Web developers struggling to debug applications in which half the logic runs on the server and the other half in the browser.

Serving the applications

As for the application servers themselves, ColdFusion Server now is ahead of ASP, thanks primarily to performance improvements and reliability features such as clustering. Allaire's new version of the application server addresses performance and scalability issues on almost every level. To improve database access speed, the Enterprise version of the ColdFusion server now supports not only Open Database Connectivity database connections, but also OLE databases and native drivers for Oracle and Sybase, as well as stored procedures.

To address scalability, ColdFusion's Enterprise Edition supports server load balancing using Bright Tiger Technologies' ClusterCATS software, which ships as part of the product. Setting up a ColdFusion cluster is simple. An update for the application server, due in January, should provide failover support as well.

Wrap-up

You don't need to choose between ASP and ColdFusion. You can use both products on a single site, although you can't run them on the same page. ASP is an NT-centric environment (although ChiliSoft provides support for ASP on other servers), while ColdFusion Server runs on NT, Solaris and soon, Linux.

The best approach may be to exploit the strengths of each product. Visual InterDev provides numerous site management features that ColdFusion Studio lacks. ColdFusion excels at database connectivity, and ColdFusion Studio is hands-down the better tag editor. Fortunately, you can use ColdFusion Studio as the default editor within the Visual InterDev environment.

For many, the choice of one technology or another boils down to familiarity or personal preference. Internet-oriented developers coming from an HTML tagging environment will find ColdFusion Studio more comfortable than Visual InterDev. Visual Basic programmers building Microsoft-specific intranet applications will find Visual InterDev and ASP more familiar. While it used to run a strong second, Allaire's new release puts ColdFusion Server and ColdFusion Studio ahead of ASP and Visual InterDev in nearly all respects.

Net Results

	PROS	CONS
ColdFusion Server 4.0, ColdFusion Studio 4.0 *Allaire* *(617) 761-2001* *www.allaire.com*	▲ Excellent HTML editing ▲ Easy to use tag-oriented development environment ▲ Scalable and extensible application server	▼ Site management tools are missing ▼ Support for client-side scripting needs improvement
ColdFusion Server 4.0 (Enterprise Edition) $3,495 per server; (Professional Edition) $1,295 per server; ColdFusion Studio 4.0 $395.		
Active Server Pages 2.0, Visual InterDev 6.0 *Microsoft* *www.microsoft.com/vinterdev*	▲ Powerful site management tools ▲ Visual design-time controls provide basic rapid application development	▼ Text-based HTML editing weak ▼ Third-party additions or other Microsoft products required to extend or scale server
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Powell is president of PINT (www.pint.com), a San Diego-based Web development and research firm. He is the author of Web Site Engineering and HTML: The Complete Reference. *He can be reached at tpowell@pint.com.*

REVIEW

Checking your remote access pulse

Concord Communications' Network Health-Remote Access makes monitoring your remote access components a snap.

By Michael Gardner

If you manage your company's remote access devices, you know it can be difficult to ensure all the pieces work properly, nevermind plan for growth. What you need is a personal trainer to help you watch devices, monitor connections and budget for future needs.

Concord Communications' Network Health family of applications is a network fitness consultant. Its server modules monitor traffic and devices on the network, and its desktop-based clients report on the collected data. The newest module, Network Health-Remote Access (NH-RA), uses the same data and interface as its sibling modules to track remote access servers, modems and connections. We were impressed with the variety and usefulness of the reports built into NH-RA and the ease with which we could customize its output to meet our needs.

NH-RA recognizes remote access ports, servers, routers and modems, and measures their performance, stability and load in a variety of ways. The software collects data by polling the devices on a schedule you can adjust to suit your needs. You can collect data about bandwidth utilization, bytes in and out, errors, device availability and even reboots. You can create groups of elements for which you can run reports, so you can pool information or compare performance. You can view the information in a snapshot on the console or in printed reports that show trends over time.

Reports are easy to build, though initially we didn't think so. The documentation specifies a console screen display size of 800 by 600 pixels, which was what we were running, but the interface we saw was missing some critical elements. Switching to a resolution of 1,024 by 768 solved the problem. We tested the Windows NT version of the product; it's also available for Unix. The display glitch was caused by the version of X Window System that NH-RA uses to run its Unix-based programs in an NT environment. When the developers translated the code from Unix to NT, they also failed to implement Windows keyboard commands.

When you're up and running, NH-RA lets you focus on the output, rather than the process of building and formatting measures and reports. In addition to performance and load monitoring, you can use the product's Traffic Accountant to track usage and allocate costs by group or element. All the reports are displayed using Adobe Systems' Acrobat 3.0, which is included with the software. Reports can also be run from a desktop or remotely using a Web browser. When reports fail, NH-RA generates error messages that clearly explain the reasons for the failure, such as insufficient data.

The amount of data you can collect and the number of reports you can produce with NH-RA can get bewildering. Once you're comfortable, you can build your own custom reports to help you aggregate data in ways that are meaningful to you, which should allow you to reduce the number of reports you're running. Reports are displayed and printed by default in Portable Definition Format and can be converted to ASCII format for display through third-party applications such as Microsoft Excel. The controls and reports can be manipulated and viewed through a Web browser as well.

While all these tools are great, they're also a bit overwhelming for smaller sites. The price of the product reflects its scope — at $16,000 for openers, you're not going to want to buy this to make pretty charts to support your budget request for a new modem.

Score Card

	Reporting (45%)	Manageability (25%)	Features (10%)	Installation (10%)	Documentation (10%)	Total score
Network Health-Remote Access	9 x .45 = 4.05	9 x .25 = 2.25	9 x .10 = 0.90	9 x .10 = 0.90	7 x .10 = 0.70	8.80

Individual category scores are based on a scale of 1 to 10. **Percentages** are the weight given each category in determining the **total score.**

Simple setup

For all that it allows you to measure, NH-RA is amazingly simple to install and configure. The product requires a Pentium Pro CPU running at 200 MHz or better with a minimum of 128M bytes of RAM. Concord recommends "196MB" (we're sure it means 192M bytes) of RAM for optimum performance. The company also strongly recommends access to a color printer for generating a hard copy of reports. After viewing some of the output, we agree — the value of black and white reports is limited.

With the exception of typing in the long license key strings for each module — we couldn't make the copy-and-paste method the installation guide suggested work — the software fills in its own blanks. The Discover process finds devices to be monitored and can be repeated manually or scheduled regularly, so NH-RA can start monitoring new equipment whether or not you remember to reconfigure it.

For the most part, our installation went smoothly. The installation guide warns of necessary changes to a couple of NT settings, such as ensuring SNMP services are installed and started. The guide walks you through the adjustments, and if you get cocky and skip sections, the setup routine will stop and remind you that you've been negligent.

Some glitches

While all the documentation was well organized, easy to follow and sufficiently detailed, we did have some minor complaints. The product's readme file hadn't been updated in ages, with references to the beta version throughout. This is likely to unnerve anyone who takes the time to view the file.

The installation guide also instructs you to leave the Domain field blank in the User Ac

count setup if the account has been defined locally. Ours had been, but our attempts to set up a user failed repeatedly and caused the installation to abort. However, once we ignored the instruction and filled in the Domain name, setup was able to continue.

The Remote Access module extends the excellent reporting features of NH-RA to modems, remote access servers and WANs. Although the software and the documentation have more hiccups than we'd expect from a product this far evolved, its flexibility, features and data handling are simply unsurpassed. Any company large enough to consider NH-RA is sure to have remote access management needs serious enough to justify the purchase price.

Gardner is a freelance writer and editor in San Francisco. He can be reached at dadymike@sirius.com.

Net Results

Network Health-Remote Access 4.1
Concord Communications
(508) 460-4646, www.concord.com
$16,000 management console and Remote Access add-on; $32 to $250, each managed element

PROS

- ▲ Many useful reports
- ▲ Easy to use and customize

CONS

- ▼ Unix-centric interface, even on NT
- ▼ Expensive
- ▼ Documentation sloppy in places

Management Strategies

Shopping spree

Ordering from a catalog this year? IT elves help ensure you get the goods in time for the holidays.

By Loretta W. Prencipe

As millions of shoppers work off their Thanksgiving excesses at malls across the country this Friday, Bill Ayers and Ellis Admire will be hard at work in their offices preparing for an onslaught of phone calls on Monday.

Known in the retail industry as Black Friday, the day after Thanksgiving traditionally marks the start of the holiday shopping season, when merchants' profits move out of the red and into the black. But the big day for direct merchants comes Monday, Nov. 30, when people swear off jammed parking lots and endless lines and shop from the comfort of their homes.

A technical specialist for Lands' End in Dodgeville, Wis., Ayers is gearing up for the catalog retailer's busiest day of the year. He expects a mind-numbing 100,000 calls to flood the company's phone lines, a huge jump from the average call volume of 40,000 per day. During November and December 1997 alone, Lands' End service representatives answered four million calls. "We do 40% of our entire business during the fourth quarter," Ayers says.

Packing the bulk of your bottom line into three short months means one thing — no upgrades or new installations come October. "We must minimize risk and downtime during the holiday season," says Admire, director of MIS operations at Lillian Vernon's national distribution center in Virginia Beach, Va. The catalog retailer sends out 50,000 packages per day during peak shopping season. A system outage could cause a monumental loss of revenue.

Ayers and Admire rely on mainframes for customer service, order entry and shipping applications. "Mainframes are pretty bulletproof and are easier to support than a lot of PCs," Ayers says. In fact, systems problems haven't brought down preholiday catalog operations in Ayers' 14 years with the company.

Bill Ayers of Lands' End *makes sure the catalog retailer's network can handle millions of calls.*

JOHN SIBILSKI

Reliability isn't the only thing mainframes have going for them. Lands' End's order-entry system is blazingly fast, consistently providing subsecond response time. Customer representatives use dumb terminals connected to the mainframe via a token ring network.

"We try to keep the orders flowing," Ayers says. "If service representatives are sitting and waiting for the screens to refresh, conversations drag and that drives up costs."

At Lillian Vernon, service representatives enter nearly six million orders per year into an AS/400 midrange system. After the system authorizes credit card transactions and corrects errors, it passes the order along to a mainframe that handles customer service, shipping and billing.

Mainframe applications process the order and determine box sizes and shipping methods. The applications also assign tracking numbers to each package — a must when 290,000 orders are processed during the peak holiday week, Admire says.

Arriving at Thanksgiving with the network ready to go doesn't happen overnight — it's a year-long process. Ayers spends the first half of the year reviewing the previous holiday season's call and sales figures and planning for the next one.

Order volumes are low during the second quarter, so that's when the five-person IS group performs the bulk of upgrades and rollouts.

As the summer comes around, Lands' End kicks off its annual training program for 2,600 employees hired for the holidays. All training is completed by October.

Come Labor Day, Ayers' technical services group begins to connect extra dumb terminals to accommodate the temporary help. During the high season, Lillian Vernon is home to 4,700 employees. The influx of seasonal hires means Admire spends a typical day answering production-related questions from system users who are new to their jobs.

"On a bad day, we'll have several production problems," Admire says. The usual culprits are user error: jobs run out of sequence, hardware failures and software problems. "MIS will work long hours to resolve these problems because our users and customers expect the system to be up as close to 24 hours a day as possible," he says.

Ayers adds another problem to Admire's list — the failure of an IBM 3174 control unit that connects dumb terminals to the mainframe. "If we lose one unit, it takes 32 to 63 people off the phones." Someone on his team is always on call and reacts immediately.

Santa wouldn't have it any other way.

Prencipe is a freelance writer and attorney in Springfield, Va. She can be reached at LWPrencipe@mailexcite.com.

HERE'S A TOOTHBRUSH, NOW ANSWER THE PHONE.

Working in rural Wisconsin means working through serious snowstorms, says Bill Ayers, technical specialist for catalog retailer Lands' End in Dodgeville, Wis.

"We have an emergency weather plan. It includes a list of employees who own four-wheel-drive vehicles and the local fire department's phone number," Ayers says. Firefighters deliver toothbrushes, toothpaste and sleeping bags to employees who need to stay or get stranded at the company's facility.

Major snowstorms that shut down other local businesses are just a blip on the screen at Lands' End. The international 24-7 operation can't afford to shut down, Ayers says. During the blizzards of 1986 and 1988, Ayers switched from techie to end user, putting on his customer service hat and taking phone orders. "We stayed up. People pitched in wherever they were needed," he says.

Ayers shouldn't be surprised if he finds himself manning the phones this year, either. Meteorologists are forecasting a harsh winter.

— Loretta W. Prencipe

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November 30th Issue

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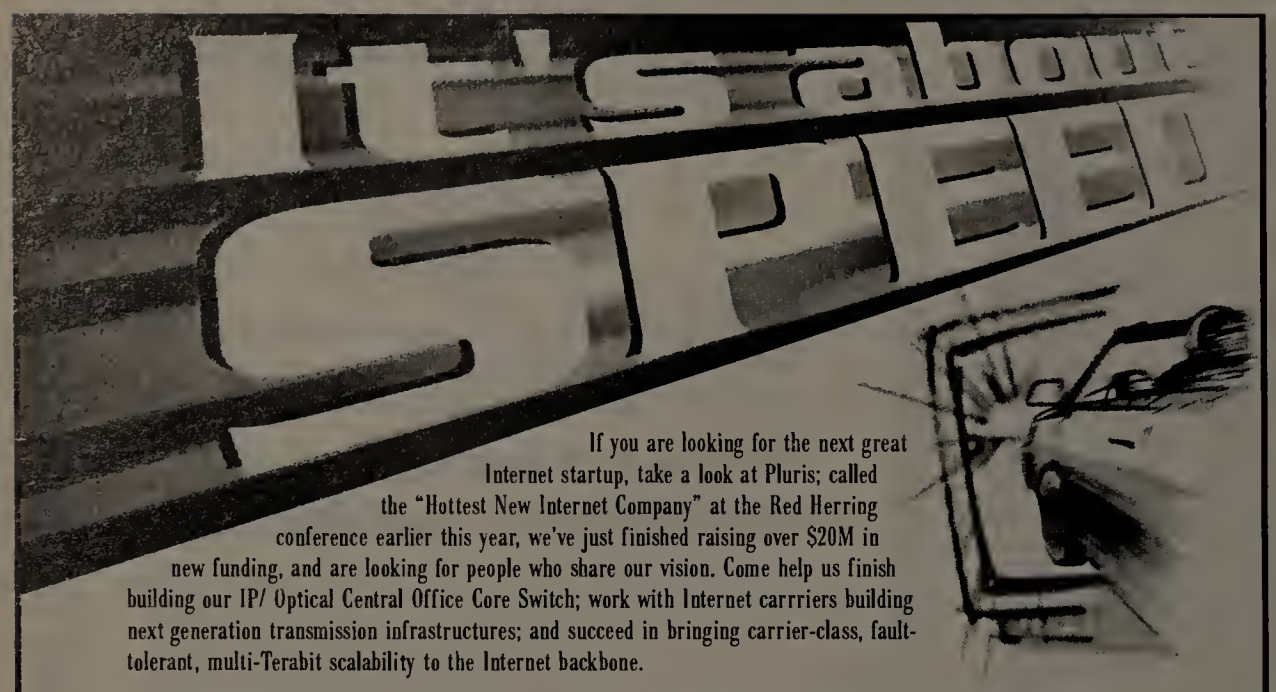

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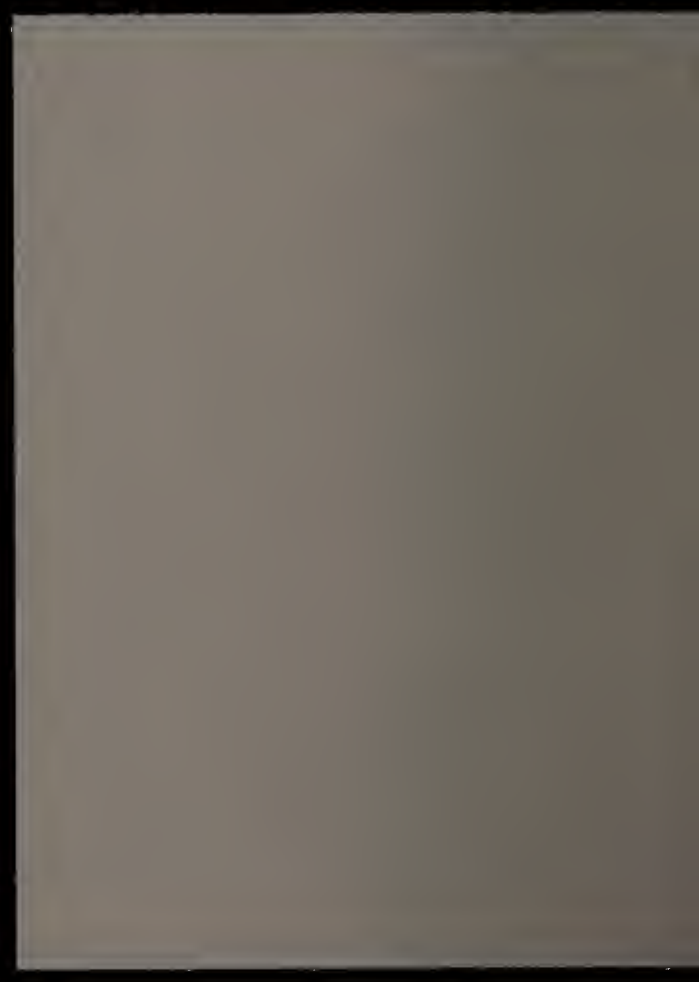

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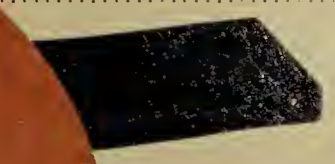

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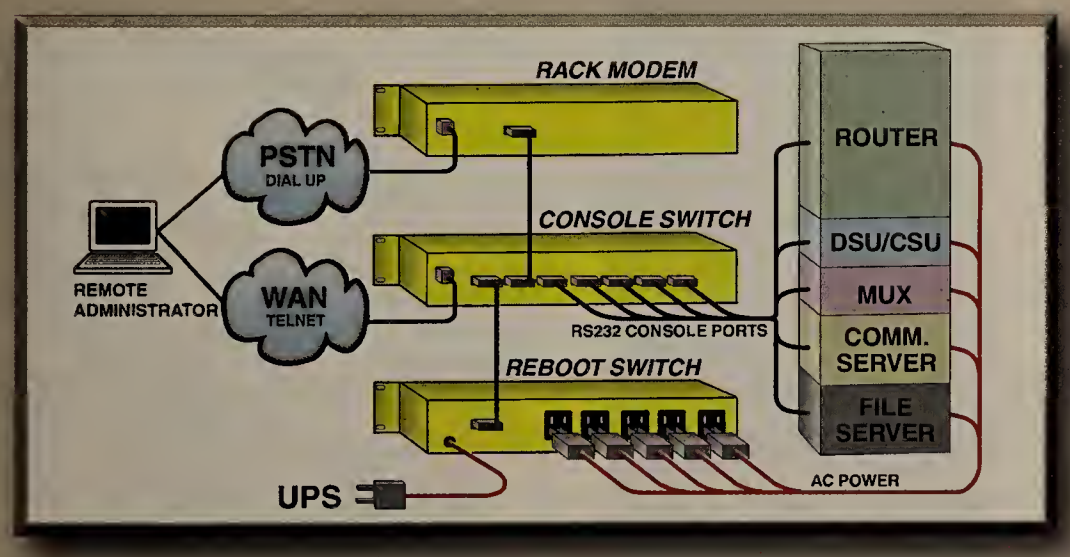

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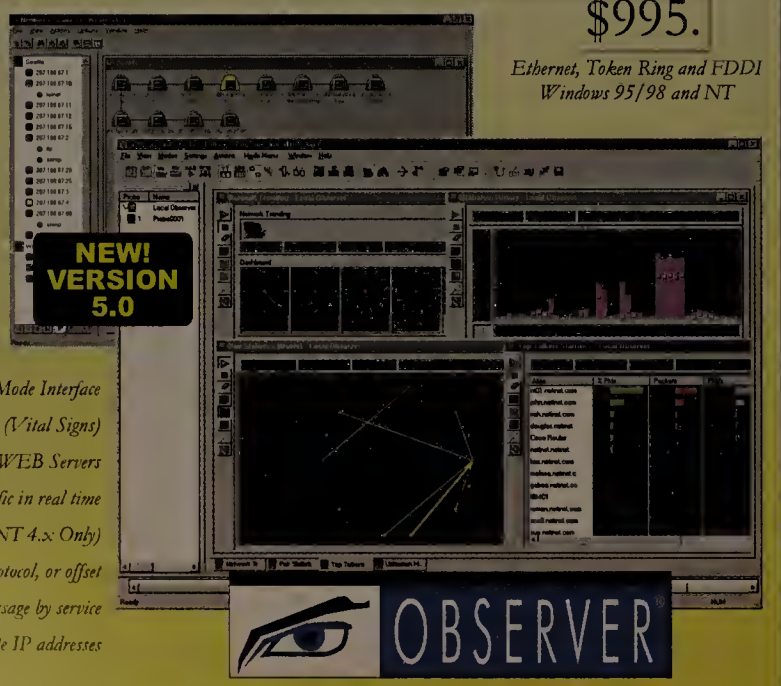

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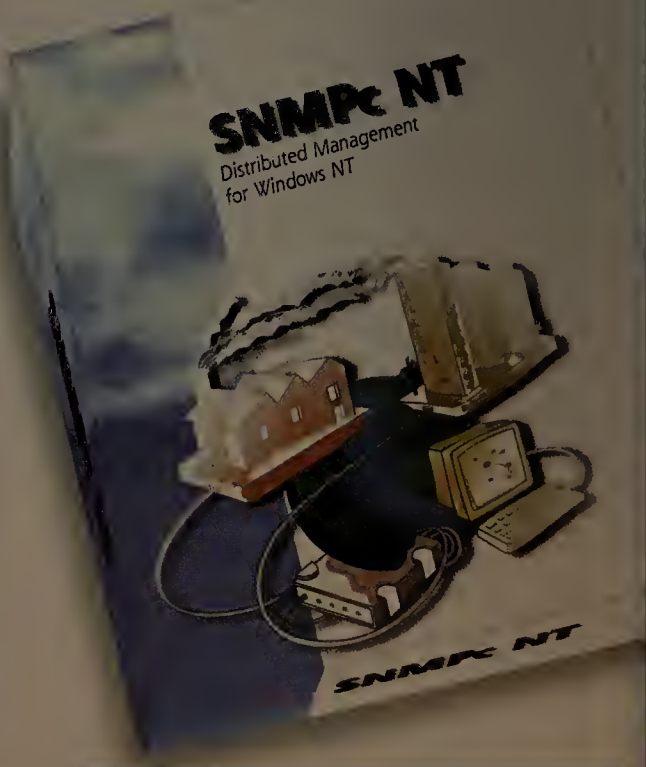

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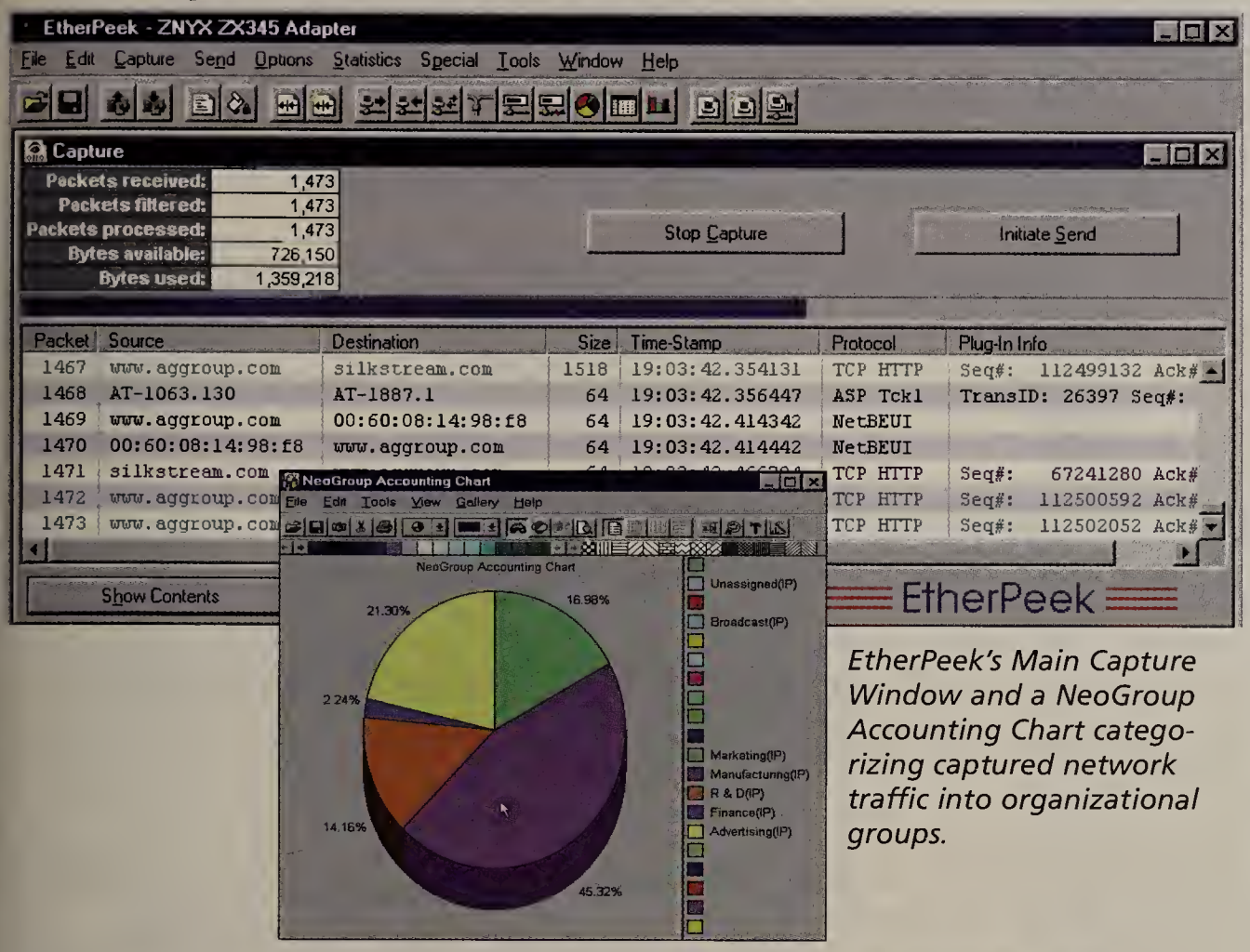

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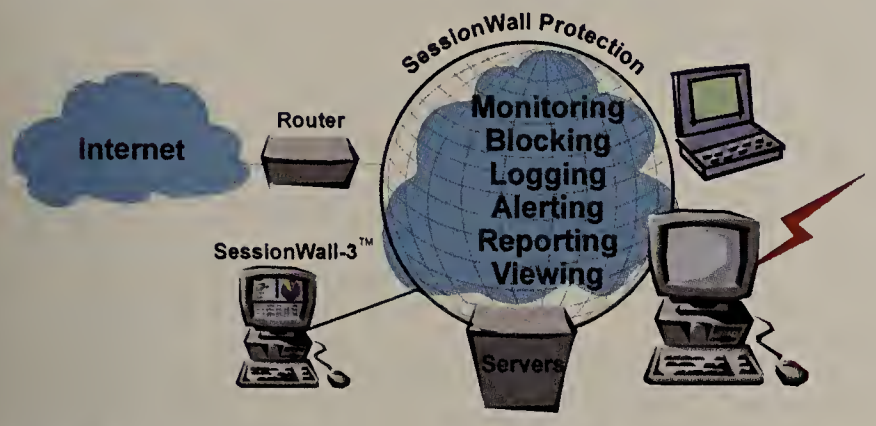

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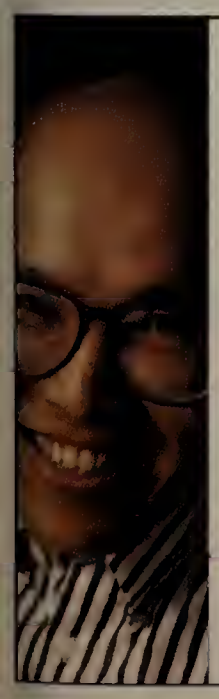

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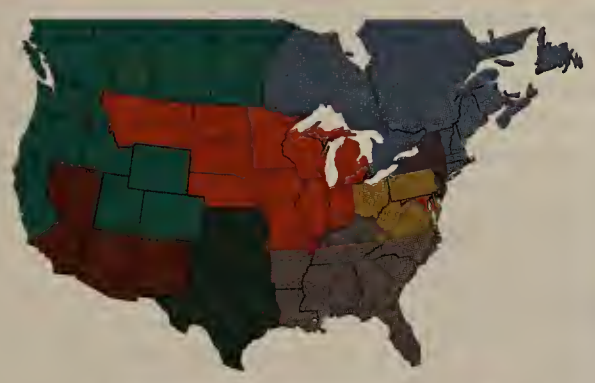

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NDS

Continued from page 1

be viewed as a marriage [of the products] by any means," says Rick Villars, director of network software research at International Data Corp., a Framingham, Mass., consultancy.

"It's simply an acknowledgement that Novell users, who also happen to be using Cisco hardware, need some attention," he says.

Novell tried to portray the deal as a giant leap forward in CEO Eric Schmidt's mandate to push NDS into every corner of customers' enterprise networks.

"It's incredibly important for us and for our customers that Cisco sees NDS as a directory service it needs to support," says Ronald Palmeri, vice president of strategic relations at Novell.

Novell has been clamoring to get Cisco on board since Cisco first penned a more exclusive deal with Microsoft in May 1997. That deal gives Cisco a role in developing Active Directory, a yet to be released Microsoft product that will compete with NDS. Cisco has committed to Active Directory as its strategic directory service for future policy-based management wares.

As a side project, Microsoft and Cisco spearheaded the Directory Enabled Network (DEN) Initiative, an effort to get hardware and directory vendors to agree on a common way to represent information about hubs, switches and routers in directories. Cisco has consistently said it would only provide NDS ties to its gear via mutual support for DEN.

But what Cisco has now agreed to do is link NDS and two of its existing policy management products, the Network Registrar and User Registration and Tracking service. These ties will synchronize information about registered users between NDS and the CiscoAssure policy management server.

According to Cisco officials, it is already possible to tie the Network Registrar to NDS because they both support the Lightweight Directory Access Protocol (LDAP). This level of support is available to any directory company that has an LDAP-enabled product, says Joe Hielscher, director of marketing for policy management at Cisco.

Cisco will, however, make extensions to its User Registration and Tracking service specifically for NDS.

Those hooks should be delivered in the second quarter of next year.

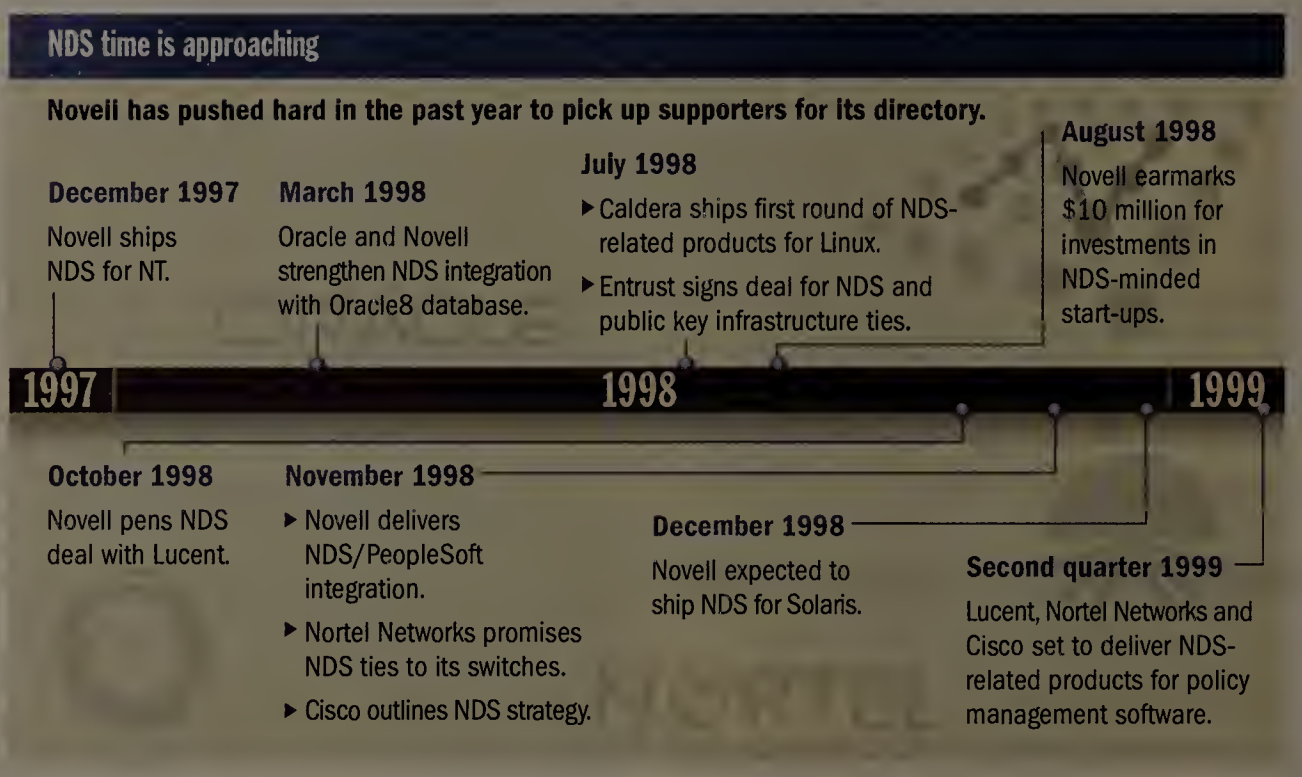
Why the change of heart? Cisco has been getting pressure to back NDS from customers who use Novell products (*NW*, Sept. 7, page 1).

Tom Ferris, a network administrator for a financial institution in Washington, D.C., who started a forum on this topic on Network World Fusion last August, isn't overly enthusiastic about this new partnership, because of its limited scope.

"But I hope it is an indication of an expanding relationship," Ferris says.

Bill Kanneberg, technology manager for the Hillsboro, Fla., county government, is also skeptical. The county is looking to upgrade the gear used to support a 55-server NetWare 4.X network. "It's down to Lucent and Cisco," Kanneberg says.

"Cisco gives the impression that they haven't fully bought into the whole NDS strategy. That leaves big questions in my mind about just how well their integration is going to work," he says. ■



Novell NDS agent to help manage Cisco gear

Novell beat Cisco to the punch by being the first to demonstrate software that can control Cisco gear via Novell Directory Services (NDS).

The same day Novell announced a deal with Cisco regarding ties between Cisco's network gear and NDS, Novell introduced a new Java utility, now in prototype, that lets NDS users configure and manage switches and routers from Cisco — or its competitors.

Novell is expected to ship this technology as an add-on service within 18 months.

Built internally by Novell, this yet-to-be named technology includes a Java agent that sits on a NetWare 4.X or 5.0 server and provides basic communication between software embedded in the hardware device and NDS. Configuration data for each hardware device is stored as an NDS object.

Should an administrator want to change any configuration parameter of the switch or router, such as the number of ports and where a particular packet may be routed on the network, he would do so inside of Novell's ConsoleOne Java management console. Those changes are then automatically populated out of the hardware device via the Java agent.

Novell officials say the product is useful in setting up new routers as well.

A network administrator just needs to point new or replacement routers to the directory to configure them. The Java agent then downloads the configuration data stored in NDS to the hardware and automatically reboots it.

Industry observers note that while the Novell tool may be able to handle simple router configuration changes via NDS, more complicated management tasks, such as setting up routing tables, will still be handled by more sophisticated wares from the hardware vendors themselves.

Tom Ferris, a network manager with a Washington, D.C. financial organization, says he was more excited by Novell's demonstration than he was about Cisco's plan to support NDS with its CiscoAssure network policy software.

"Infrastructure guys make big money partially because of the high level of expertise required to configure switches and routers — it's not rocket science, but it sometimes looks that way," Ferris says. Managing these devices from inside the directory will be much easier, he says.

For more information, contact Novell at (800) 453-1267.

— *Christine Burns*

OpenView

Continued from page 6

of Nortel's Bay routers — often will communicate on another level, Shay says.

The discovery technique has been used by HP OpenView software for eight years, Shay adds.

However, users are starting to have difficulties now because of increased Web traffic, Shay suggests.

A router directing traffic to Web servers may build a large routing table because it will be transmitting data from many places, inside and outside of a company's network. This is different from networks in the past, which may have only managed communications inside the company.

One user who told the OpenView Forum of performance degradation in a Cisco 7513 router says its routing table contains 50,000 routes.

The problem with OpenView and other network management platforms developed earlier in the decade is that they weren't built with scalability in mind, says John McConnell, president of consulting firm McConnell Associates in Boulder, Colo. "Part of what keeps HP behind is that it doesn't have a full-scale, multitier architecture," he says.

He notes that HP has said it will bring together its various network management technologies to create such a multitier structure by the mid-1999.

Such a structure would have regional management servers reporting back to central managers, to break up the management load while sending data back to all levels of the hierarchy that need it.

Users have complained that it can take a lot of processing power and memory on the OpenView NNM workstation to get the polling function to work.

Typically, NNM requires 96M bytes of RAM on an HP 9000 server for a 2,500-node network. More memory is required in larger networks: the more elements in the network, the more capacity needed.

McConnell says HP needs to distribute the polling function more, so that one huge box isn't required. ■

Venture capital

Continued from page 1

received only 30.5% of the $3.73 billion in overall venture capital spending in Q2.

The number of network companies that received funding and the average value of each network deal also reached new levels in Q3. The 251 network firms that received venture capital in Q3 is 20% more than the 209 given funds in Q2, the previous record quarter.

And the average dollar value of $6.5 million per network deal in Q3 eclipsed the $5.46 million average in Q2, as well as the $5.6 million Q1 average. It also was close to twice the $3.8 million average from the first quarter of 1997, less than two years ago.

As has been the case in recent quarters, wireless and Internet technologies — particularly electronic commerce software and services — were the chief money magnets in Q3.

More than 20 wireless firms and more than 25 electronic commerce start-ups drew venture funding during the quarter.

"The convergence of voice, data and video is driving technology innovation, as well as the demand for new products and services," says Steve Meisel, who analyzes the network communications sectors for PricewaterhouseCoopers' quarterly venture survey.

"Current predictions indicate the volume of data traffic will exceed voice traffic within two years," he says. Specifically, Meisel says, "The change from circuit-switched to packet-switched networks is fueling significant investments in the communications sector."

Among the Q3 beneficiaries of this trend were Tollbridge Technologies of Sunnyvale, Calif., a vendor of network access products that enable competitive local exchange carriers (CLEC) to offer customers voice-over-IP services, and Convergent Technologies of Tewksbury, Mass., which makes equipment for carriers to switch public voice traffic across a multiservice ATM backbone. Tollbridge received $6 million from several investors, and Convergent received $7 million.

More than anything, it is the staggering breadth of investment in network technologies that stood out in Q3, as venture capitalists collectively laid bets on every game in town.

There were more than a half-dozen investments each in a wide range of network categories, including CLECs, ISPs, Internet and network connectivity, switches and routers, security, storage and retrieval, IP telephony, network and program management, servers and application development tools.

"We're continuing to see an enormous amount of quality activity in several explosive new segments — optical networking, voice over the 'Net, next-generation access, high-speed switching, and broadband communications components and systems," says Jim Breyer, managing general partner at Accel Partners in Palo Alto, Calif.

Accel remains one of the busiest venture capital firms in the network sector, with 10 investments in Q3. Among them are Actuate Software ($750,000) of San Mateo, Calif., which sells enterprise reporting software, and AlphaBlox ($1 million), a vendor of component tools and application software for intranets.

Accel also sees potential in the CLEC market, having invested $9.75 million in Q3 in 2nd Century Communications of Tampa, Fla.

"The CLEC area is going through an enormous transition, and that means opportunity," he says. "We expect to make several more CLEC investments over the next 12 to 24 months."

New Enterprise Associates (NEA) also is bullish on optical networks, according to NEA's Rob Coneybeer.

"There's going to be a wave of new optical switching companies coming out because the optical components are becoming available at prices that make the overall system-level packages attractive," he says. "This is because, with the newly available components, you can integrate [dense wave-division multiplexing] gear, packet switching and SONET muxes into a single box."

Among NEA's 12 third-quarter investments was Mayan Networks ($8 million) of Santa Clara, Calif., which makes multiserver carrier-class switches for CLECs and ISPs.

"In the SONET access market, Mayan has the expertise required to properly integrate voice and data into packet over SONET," Coneybeer says.

Advent International had no specific technology theme to its Q3 network investments, opting for an eclectic group of companies that the venture firm believes have strong business models, according to Andrew Fillat, managing director of the company's Boston office.

One of those firms was NetBuy ($2.79 million), a 'Net-based electronic components distributor in Santa Clara, Calif.

"We have been very cautious in diving into Internet commerce," Fillat says. "We did NetBuy because we believe they have a viable model that complements rather than competes with the existing channels for distribution of electronic components."

Advent also was one of several investors in XIOtech ($10.1 million) of Eden Prairie, Minn., which makes disk storage subsystems for the enterprise and Internet servers. ■

$25 MILLION CLUB

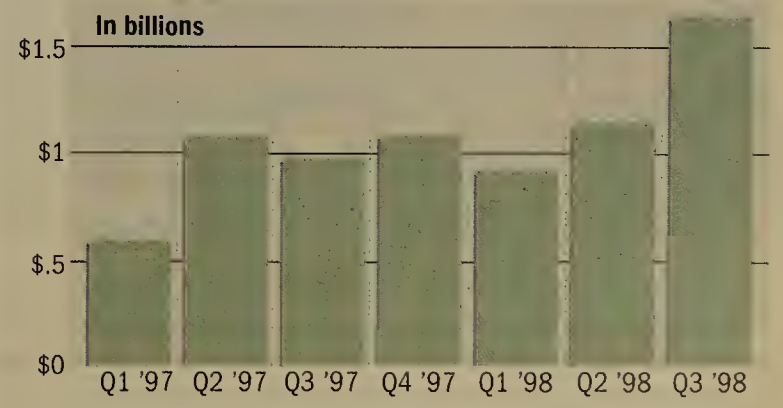
The following companies received the largest amounts of venture capital in the third quarter:

Company	Amount	Product/service
StarMedia, New York	$80 million	Spanish/Portuguese language Web portal
Real Select, Westlake Village, Calif.	$50 million	Online real estate listings
Commerce One, Walnut Creek, Calif.	$34.4 million	Web electronic commerce software
Talk City, Saratoga, Calif.	$34 million	Chat site and software
E-Loan, Palo Alto, Calif.	$25.4 million	Online mortgage brokerage service
Nexabit Networks, Marlborough, Mass.	$25 million	Multiterabit switch/router

SOURCE: PRICEWATERHOUSECOOPERS/NETWORK WORLD SURVEY

Another quarter, another record

Venture investing in network companies hit an all-time high in Q3 with 251 companies receiving $1.64 billion, smashing the previous high of $1.14 billion set in Q2.



The top categories of network companies that received funding were:

- **Electronic commerce:** 26 companies
- **Wireless networking:** 20 companies
- **Office/business productivity:** More than 15 companies
- **Network management:** 14 companies

SOURCE: PRICEWATERHOUSECOOPERS/NETWORK WORLD SURVEY

Linux

Continued from page 6

company.

Another reader says Unix programs port easily to Linux, but not to NT: "NT programs, on the other hand, are hopelessly intertwined and tangled in the WinAPI mess and notoriously difficult to port — no doubt by Microsoft design. Lock 'em in — load 'em up — move 'em out . . . Microsoft! Hyah!"

And more than one user has given up on NT altogether: "We finally tired of the obnoxious license restrictions, frequent crashes and abysmal performance of our applications under NT."

But not everyone was against NT: "Lets face it folks, Linux is about 20 years away from providing the ease of use that is common on all Windows operating systems. I will admit that Linux is very customizable and allows you to do many things that Windows operating systems don't. The main problem with Linux is that it is way too difficult to use. . . . For people who use computers to get work done, and not to work on the computer, use Windows."

Do you have an opinion? We'd like to know. Keep those responses coming at Fusion Face-off: Linux vs. NT at www.nwfusion.com/forum. ■

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Holiday

Continued from page 1

can create an e-mail network nightmare in some shops. Experts also warn that these

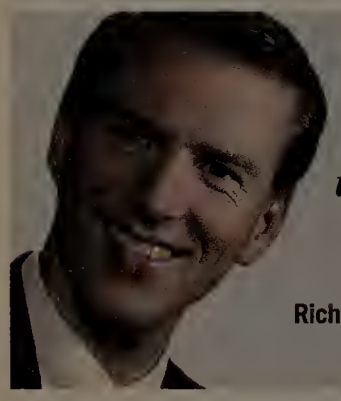
SPECIAL REPORT:
Oversized e-mail

e-cards, as well as seasonal screen savers, jokes and the like, pose a serious virus risk as they pass from desktop to desktop.

Aside from written policies disallowing these e-mail exchanges, limiting attachment sizes, and filtering for the most popular files, are the countermeasures of choice, managers say (see graphic).

Brian Holle, e-mail administrator at Roche, says his company's bout with the holiday deluge last year "was disastrous, brutal. . . . We still talk about it.

"At that point, we had three different mail systems, so there was a lot of routing through this corporate hub and [the holiday-related files] just drove



"We purchased substantial equipment to meet the increase in [network] traffic. . . . the load crippled us."

Richard Bliss, vice president of marketing, AllegroNet

the thing into the ground," Holle says. "It backed up all the queues, pretty much filled the hard drive, mail was taking hours to get through."

An urgent plea asking employees to stop sending the files did manage to stem the flow, but not before Holle and his colleagues had been put through a fire drill.

"For about three days we were manually going into the queues and deleting these messages," he says. "I was manually moving mail through cc:Mail up to the hub for about two days while we were trying to get over this."

Richard Bliss also finds nothing joyful about these electronic greetings. He's an executive at AllegroNet, an Ohio e-mail outsourcing company that felt the wrath of Rudolph and The Snowman last year.

"We had to react immediately because in December we were beginning to lose customers who were seeing a slowdown in service," Bliss says. "I'm estimating that we lost 25% of our customer base over the next five months because they got hit with much higher phone connection charges."

Customers saw their connection times more than double and were understandably angered by bills that skyrocketed from several hundred dollars to as much as $2,000 per month. AllegroNet managed to assuage some customers by switching them to a dedicated connection, but others defected to ISPs.

"We purchased substantial equipment to meet the increase in [network] traffic," Bliss says. "At the time, we were still adding new customers at a high rate, and the load crippled us."

This season, AllegroNet is not only better equipped to handle the holiday rush but is also offering a free filtering service to any business willing to have its Internet e-mail routed through the outsourcer's system. Bugaboo files such as snowman.avi and rudolph.exe will be targeted and removed.

Why are these otherwise amusing files so bothersome? In a phrase: They spread like crab grass.

"While visiting one of our clients, I saw at least 15 copies of snowman.avi [2M bytes] enter the company from the Internet every hour, 24 hours a day, for more than a week," says Joel Snyder, a senior partner with Opus One, a consulting firm in Tucson, Ariz. "Once they get in, people pass them around."

This proliferation is "very bothersome and worries me a lot," says George Taylor, a network analyst at Black Hills Heath Care Network in Spearfish, S.D.

"I've actually seen machines that have a 3-to-1 ratio of these animations to applications on the desktop," Taylor laments. "How productive do you think that machine is?"

Worse yet are the implications for the network, he adds.

"We end up with a 2-meg file being replicated over our entire WAN, then of course everyone has to save it, so where does it go? Home directory, of course," Taylor says. "Say 100 people save it on each of our nine servers. Multiply that by four or five of these during the holidays and four or five more throughout the year, and we're talking enough space to drive my Olds through."

The chances of a virus getting through are also increased, he adds.

"We do have standard protection on every desktop," Taylor says. "But shoot, we're seeing viruses all the time that our software doesn't catch."

These electronic greeting cards and multimedia files are becoming more bothersome, in part, because ever more Web sites are offering visitors the opportunity to distribute them willy-nilly. While the holiday versions get center stage this time of year, Web classics like the dancing baby and the PC-bashing badday.avi contribute heavily to the problem, experts say.

You may want to look at the bright side, however. While administrators may have a hard time appreciating this silver lining, the proliferation of the holiday e-cards does say something positive about e-mail, according to Snyder.

"E-mail is so good and so strong and so popular," he says, "that people don't even think about the impact of this kind of thing." ■

How to control holiday hogs

Experts' tips for curbing e-cards and multimedia clips.

- Limit the size of attachments that will be accepted by the company e-mail server.
- Consider filtering software, such as Content Technologies' MIMEsweeper, which can scan for specific filenames such as snowman.avi and rudolph.exe.
- Upgrade inadequate or obsolete hardware that could cause bottlenecks when e-mail volumes rise.
- At holiday time, reinforce e-mail use policies with a memo specifically geared to greeting cards.

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Blue Martini

Continued from page 1

designed to link online buyers to available items, and push resulting sales data through back-end, supply-chain management and enterprise resource planning systems, such as those from PeopleSoft and SAP.

Blue Martini's founder, Monte Zweben, previously served as a vice president of a $100 million division of PeopleSoft. He joined the packaged applications maker following PeopleSoft's 1996 acquisition of Red Pepper Software, a supply-chain management software firm Zweben founded in 1992. Blue Martini started when Zweben took more than $1 million of his money and pooled it with funds from private investors, who now sit on Blue Martini's board of directors.

The new firm's E-Merchandising software will manage electronic catalogs so that as online buyers shop for an item, such as a camera, they will also be presented with the opportunity to buy batteries for it.

"This is known as cross-selling," says Bill Evans, Blue Martini's vice president of marketing. "The software will give you a way to precipitate sales by defining product affinities."

The conventional merchandising wisdom is that the more information you know about individual consumers, the better you can guess what kinds of things they'll buy in the future. Even a zip code can be of use. E-Merchandising will use artificial intelligence to analyze whatever buyer data is available and select products the electronic commerce site can promote to the buyer.

Evans says the E-Merchandising software will also be able to send sales orders into existing supply-chain management software or back-end enterprise resource planning systems.

PROFILE: BLUE MARTINI SOFTWARE

Headquarters: San Mateo, Calif.
Founded: June 1998 by Monte Zweben, formerly vice president and general manager of PeopleSoft's manufacturing industry unit.
Funding: Not officially disclosed, but Zweben is said to have personally invested more than $1 million.
Employees: 25
Product: E-Merchandising, electronic commerce software.

In addition, E-Merchandising's workflow features will ensure that relevant customer information gets to the retailer's merchandise buyers or copywriters in marketing departments.

Blue Martini plans to enable E-Merchandising software to run on Unix and Windows NT and will make it accessible via any Web browser.

Analysts who have been given a peek at the E-Merchandising prototype say it's about time a company started building electronic commerce software to satisfy retailers' marketing teams rather than their technical personnel.

"I think they're onto something," says Dennis Byron, research manager for vertical industry applications at International Data Corp., a Framingham, Mass., market research firm.

"They're putting together a retail automation application that is going to help you do business on the Internet," he says.

Byron adds that software providers, such as JDA in Phoenix and Richter in Montreal, have long offered such merchandising software packages for brick-and-mortar stores and are now examining online retail product opportunities.

Blue Martini may find itself more challenged by competition from SAP's R/3 Retail Component, Byron says. That package was originally designed for physical stores but has been reworked to support online retailers, he says. ■

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Backspin

Throwing them into the black hole

I bet some of you are asking, "Just who has control of Internet Domain Name System?"

Well, those who have been following this comedic opera know that Network Solutions, Inc. (NSI), the de facto owner of DNS, is on a countdown — put on hold several times to date — to being replaced.

Mark Gibbs

The problem: NSI is generally not seen as being responsible or objective enough for the job, and there are enough examples of its self-interested mismanagement to damn the company and the horse it rode in on.

At the root of the problem is that, despite strong government ties (its board is a who's who of the intelligence world), NSI is a commercial organization. And if you should happen to think that NSI is above tawdry, everyday commercial fumbling, well, I'm here to tell you it's not.

Recently, for example, NSI — under its netsol.com domain — distributed a load of unsolicited e-mail to its customers. Many people received up to 30 copies.

But what put many recipients' backs up was the content. To start, the message — www.cctec.com/maillists/nanog/current/msg0048 html — explains the recipient must opt out to avoid future mailings. In other words, if you don't like it, you have to tell them. This is very bad thinking on the part of NSI and demonstrates a profound ignorance of Internet etiquette. Such a mailing should be opt in, or tell us if you want to be included.

Second, the message was hawking digital certificate products from a company called Verisign. As Verisign holds a seat on the NSI board, many recipients smelled ripe cheese. To make the issue perfectly clear, it appears NSI was blatantly advertising. Shame on it.

Now on the Internet, there is a service run by one Paul Vixie called the Mail Abuse Protection System Real-time Blackhole List (MAPS RBL), which you can find at http://maps.vix.com/rbl. This is a list of the IP addresses of known spammers, ISPs that either wittingly or unwittingly aid spammers by relaying their products and upstream backbone network providers that don't cooperate in tracking down spammers.

By checking the RBL for the IP address of the sender of each message, you can block out known spammers (see http://maps.vix.com/rbl/usage.html for details on using the list).

The problem Paul Vixie faces is what to do about NSI's blatant commercial spam. If it were any other organization, he would add netsol.com to the list without a moment's hesitation.

But in this case, Vixie has had to be careful: if he ticks off NSI, he could wake up to find himself dead, so to speak. NSI could simply kill off his domain, and the RBL would effectively vanish.

Vixie is currently talking to NSI, but whatever the conclusion of the talks, this is reprehensible behavior by NSI. The sooner we can kick its sorry a . . . algorithms out, the better.

The current contender for a replacement authority is the Internet Corporation for Assigned Names and Numbers (ICANN). This nonprofit organization is the bastard child of the Internet Assigned Names Authority and, believe it or not, NSI!

ICANN looked good in theory, but that's as far as it goes. The problem is, ICANN has the look of a power play by vested interests, rather than an attempt to resolve the issue of who owns DNS. We'll explore this next week. For now, let me ask you: Should netsol.com be added to the RBL?

Answers to rbl@gibbs.com. Other name-calling to nwcolumn@gibbs.com or on (800) 622-1108, Ext. 7504.

'NET BUZZ

The latest on the Internet/intranet industry

TIME TO BLAME THE LITTLE PEOPLE This is an intervention. It is tough-love time. I can no longer idly sit by and watch people throwing money at start-ups whose prospects for long-term profitability are questionable at best and laughably nonexistent at worst, even to their underwriters.

I'm talking, of course, about you, the Internet investor.

The latest outbreak of cyberstock lunacy came earlier this month when two companies with not particularly notable pedigrees — **EarthWeb** and **theglobe.com** — each set off on a rocket ride that **John Glenn** would envy.

EarthWeb, which runs an online resource site for computer professionals, was offered at $14 per share on Nov. 11. By the next day, some investors were buying at nearly $70. On Nov. 13, theglobe.com priced its stock at $9 per share. The first trade of the day was made at $87, and the price nearly hit $100 per share that morning.

Folks, theglobe.com is an online community. An online community, for goodness sakes! At $10 or $12, maybe it's worth a few shares here and there. But at $85 or $92 — well, this is simply madness.

I know some of you are into denial or blaming others. For example, an article in the current issue of *Fortune* magazine takes a hard look at how large investment banks manipulate the initial public offering(IPO) stock process for their own benefit. Author **Nelson Schwartz** lays out how small investors are hyped by ruthless underwriters and analysts into buying overvalued stocks, and then pressured by brokers to hang onto expensive shares long after prices have permanently sunk over the horizon.

Chris Nerney

In the meantime, bankers cut back-room deals with their biggest customers, doling out generous blocks of stock at discount prices and allowing large investors to quickly "flip" their shares to cash out at top dollar during the early feeding frenzy. Granted, it's no startling revelation that Wall Street insiders routinely rig the game ("What? The casinos have an edge? This is an outrage!") to fleece naïve investors.

But as **Dr. Laura Schlesinger** might ask, whose fault is that? You there, Mr. I Bought EarthWeb at $62 per share. What are you going to do in six months when you finally realize — five months after the rest of the market — that the stock may never rise above $30 again? Ever. You will tumble into a slough of despond. That is your fate, my friend.

And you, Ms. I Grabbed theglobe.com at $83. What's your excuse? Fall for a "hot tip" from some slick stock shill haunting the same low-rent **AOL** chat room? C'mon, you don't know who any of these people are. They could be the CEOs of doomed companies, say, or perhaps naked, nationally syndicated radio psychologists.

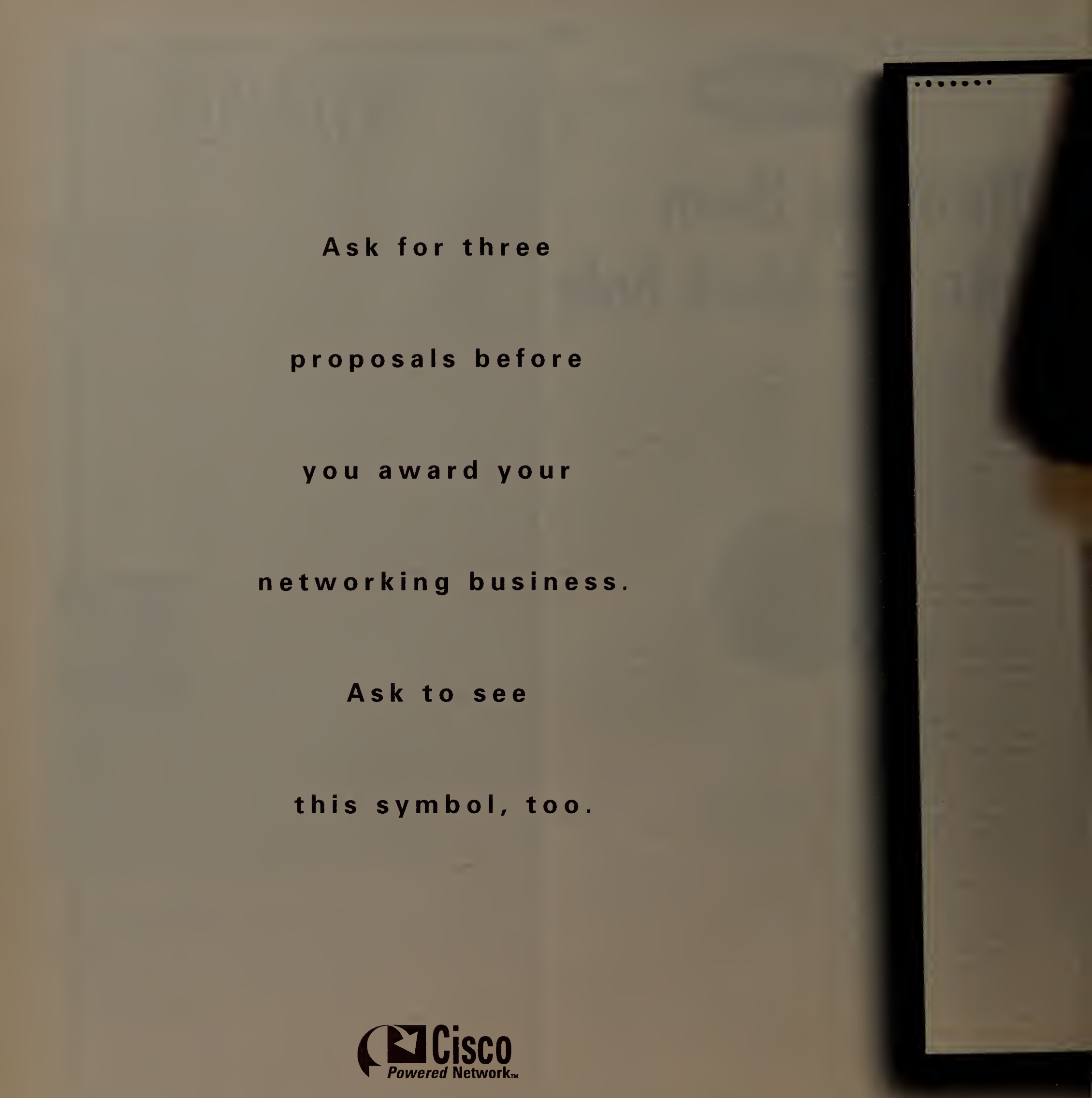
I bring all this up in hopes of saving some of you from the upcoming second offering from Internet advertising start-up **DoubleClick.** The company is trying to cash in on the latest Internet IPO fever by issuing 2.5 million shares of its stock.

Right now it's selling in the mid-$30s. Since its IPO debuted nine months ago, DoubleClick has traded as high as $77 per share, in July — bet you wished you got in then — and as low as $13, in October.

DoubleClick, like the vast majority of Internet start-ups, is still losing a pile of money. Its business model is still unproven and, therefore, so is its value as an investment. If you want to drop some cash on a DoubleClick share, be my guest. I can't stop you.

But remember two time-honored sayings that hold true even in the bizarre world of 'Net economics: 1) Buy low, sell high. 2) Fool me once, shame on you; fool me over and over again, and I am an idiot.

Your recovery can be aided by developing some healthy new interests. I would suggest that, on a regular basis, you begin sending your best Internet- and intranet-related news and gossip to Chris Nerney at (508) 820-7451 or cnerney@nww.com. Power walking and knitting are good too.



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